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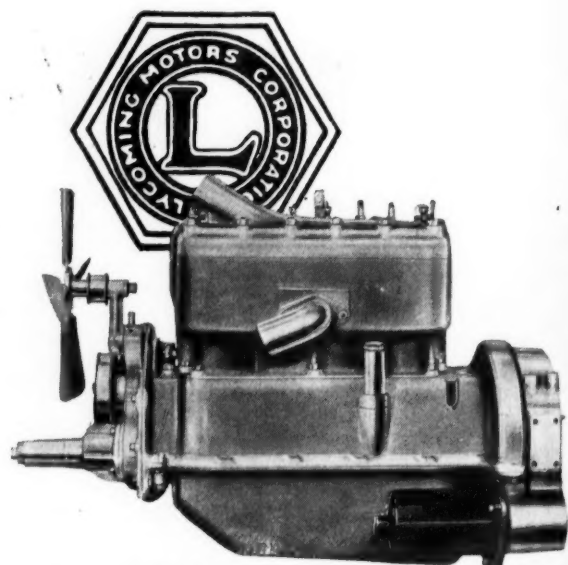
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AUTOMOTIVE INDUSTRIES

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NEW YORK—THURSDAY, AUGUST 28, 1924

No. 9

Henry Ford Says— Farmer-Workmen Will Build Automobile of the Future

An interview with Henry Ford

By Drew Pearson

THE big city is doomed. In the America of the future there will be no New Yorks or Chicagos or other mammoth collections of sky-scrapers and teeming tenements in which millions of people are cooped within a few square miles of territory.

Instead the country will be traversed by chains of small towns clustering around individual factories and inhabited by people who will divide their time between factory and farm.

This is the vision of the future which was painted by Henry Ford in an interview in which he predicted the rapid decentralization of industry. That decentralization has been actually in progress for some years and nowhere with more remarkable or striking results than in the case of the huge enterprise which is headed by Mr. Ford himself.

The picture of the America of tomorrow which Henry Ford paints is a particularly rosy one. In his opinion the passing of the big city will mean less crime, less poverty, less wealth, less unrest and less of that fierce nervous strain under which myriads of our city dwellers live today.

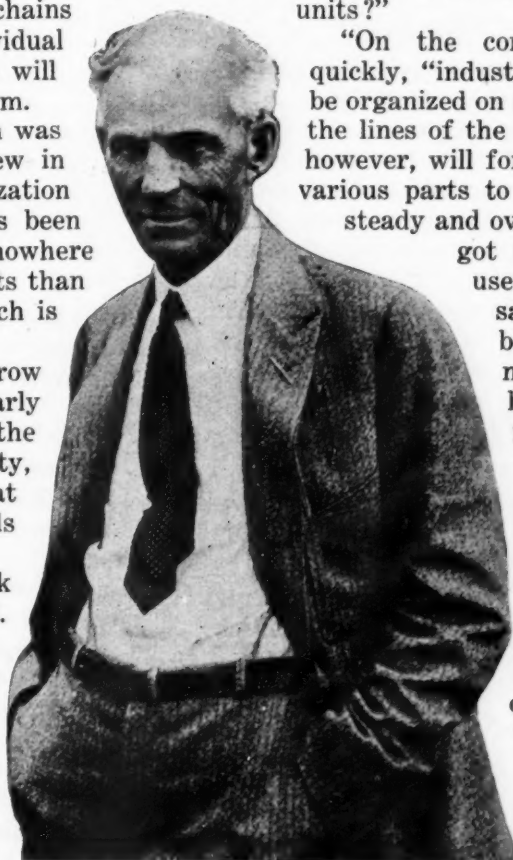
"The modern city has done its work and a change is coming," said Mr. Ford. "The city has taught us much, but the overhead expense of living in such places is becoming unbearable. The cost of maintaining interest on debts, of keeping up water supply, sewerage and sanitary systems, the cost of traffic control and of policing great masses of people are so great as to offset the bene-

fits of the city. The cities are getting top-heavy and are about doomed."

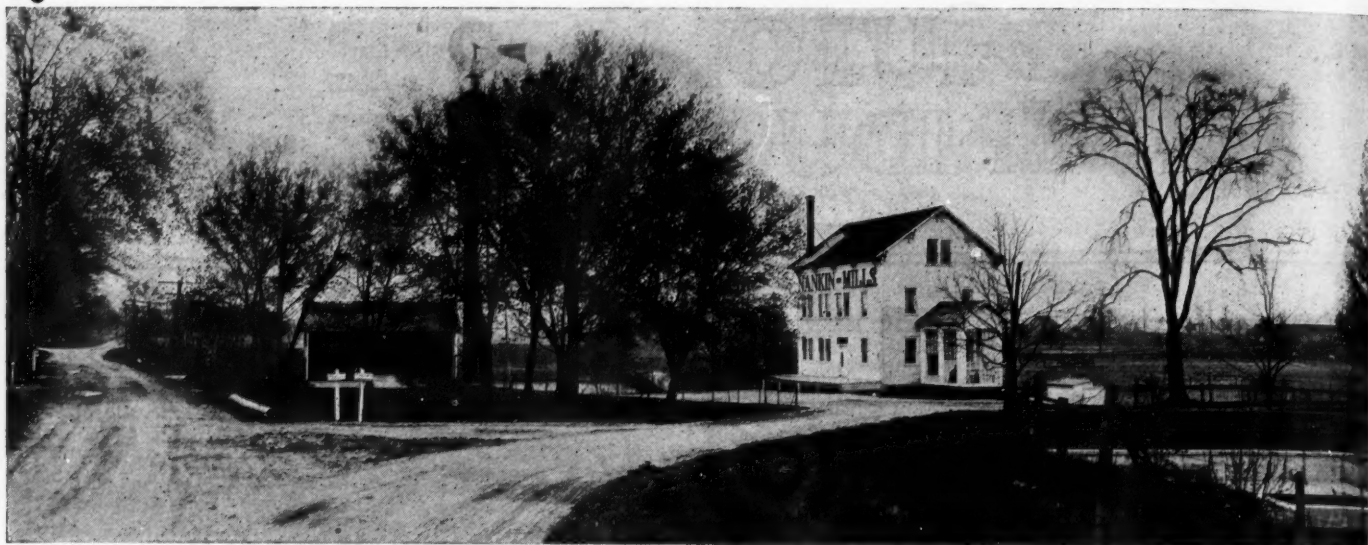
"When you speak of the decentralization of industry, do you mean that the present great industrial combinations will split into smaller individual units?"

"On the contrary," replied Mr. Ford quickly, "industry in the future is going to be organized on a big scale—somewhat along the lines of the vertical trust. Competition, however, will force big industry to move its various parts to the country where labor is steady and overhead costs low. They have

got to come around to it. We used to believe that it was necessary to concentrate industry, but I maintain that industry must decentralize. Certain heavy industries, of course, must be concentrated, but in others which involve the making of numerous small parts, these parts can be manufactured just as easily forty miles from the assembling plant as in connection with it. In our own Highland Park plant we first cut down the cost of production by taking the work on an endless chain to the man. Now we go one step further. Instead of having the man come to the city we take



International Newsreel



The old grist mill with its barn door and its oaken beams held together by means of wooden pegs has lost none of its character in becoming a unit of Ford's plan

the work out to him in the country. Improved transportation methods have made that possible and the process will become steadily more feasible as transportation facilities grow.

"At the same time," continued Mr. Ford, "it is nonsense to say that because the cities are overcrowded everybody ought to move to the farm. There must be a balance between the two. The farm has its dull season, when the farmer can come into the factory and the factory has its dull season when the workmen can get out on the land to help produce food. Transportation is the connecting link."

What Has Already Been Done

I asked Mr. Ford to tell me exactly what he himself had done in the way of decentralization in his own great industry. In reply he said:

"Go out and see for yourself. Go into the country and visit some of our village factories where we are manufacturing small parts. We have been doing some experimenting. We have moved small plants to the country, taking some of our people out of the city and employing farmers in the villages. In the summer time water is low, orders are a little slack and we let the farmer workmen off to do their harvesting. Take a look around and see for yourself how they like our experiment."

I accepted his invitation and made a trip through rural Michigan, where I visited Ford's village factories and talked to foremen and farmers about his plan for taking industry out to the country.

The River Rouge is a mud creek wandering lazily down to Detroit past half a dozen old mill sites which once ground the grist of the countryside. Today, reharnessed by new concrete dams, supplying power to modern turbines in clean white factories, the River Rouge supplies the power for grinding out carburetor valves, generator cut-outs and magneto parts for Ford cars the world over.

The first of these factories, located at Nankin, a metropolis of fourteen houses, employed eleven men—

incidentally, a substantial majority of the male population—in making 103,500 vibrator-cushion-spring-spacer-rivets per day. The river at this point gave only 15 hp., but a few miles farther up at Plymouth, a larger dam supplied 100 hp. and employed thirty-three men. Phoenix with 150 girls and Northville employing 380 men, complete Ford's village industries on the River Rouge.

The Ford plant at Nankin was originally an old grist mill and Mr. Ford has insisted on retaining the old oaken beams with their wooden pins instead of nails, and the old barn door with its huge lock. Men employed there are working four days a week, which gives them time to attend to their farms and also to save up water, which is low in the summer time. The superintendent lives in an old farmhouse which has been modernized while preserving its colonial aspect. Trucks from Detroit bring out the raw material to this as to the other village industries on the Rouge and carry back the finished material, a form of transportation which has proved inexpensive.

Foreman Enthusiastic

At Plymouth, where thirty-three men are employed, the foreman gave me a very enthusiastic account of how the plan was working with respect to the farmer mechanic. "There's Frank," he said, "with twenty-two acres. I gave him a day off last week to cut his hay. There's Jim with seventeen of the prettiest acres of farm land you ever want to see. I was up at his farm last Sunday, me and the wife and kids. Went all over the place. He is tickled to death to have a day or two off these slack times to pick his berries. There's Bill Coogan with only six acres, who is raising squabs, and Sam Stewart with a five-acre patch. Not so big as farms go, but it gives them something to fall back on and the kids a great place to be brought up in, while the wife has plenty of green vegetables. After all who would want a finer place to work. Look at that fine clean building, a lake in front—good swimming—this green grass, trees, shade, birds and that line of Fords in the rear show how prosperous our factory hands are."

At Northville valves are manufactured in what was once the biggest church furniture factory in the world. In the last three years 44,000,000 valves have been sent by truck from Northville to Detroit and the cost of manufacture has been cut 50 per cent. Previously the making of these parts meant the transporting of 380 men daily from their homes to Highland Park. The people of Northville were not enthusiastic when Ford first moved there. The business men said that prices and wages would be forced up, but Ford was careful not to take employees from other Northville industries but to get his recruits from the unemployed. As a result everybody in the town now has work and the merchants are Ford boosters for their bills are paid and property is rising.

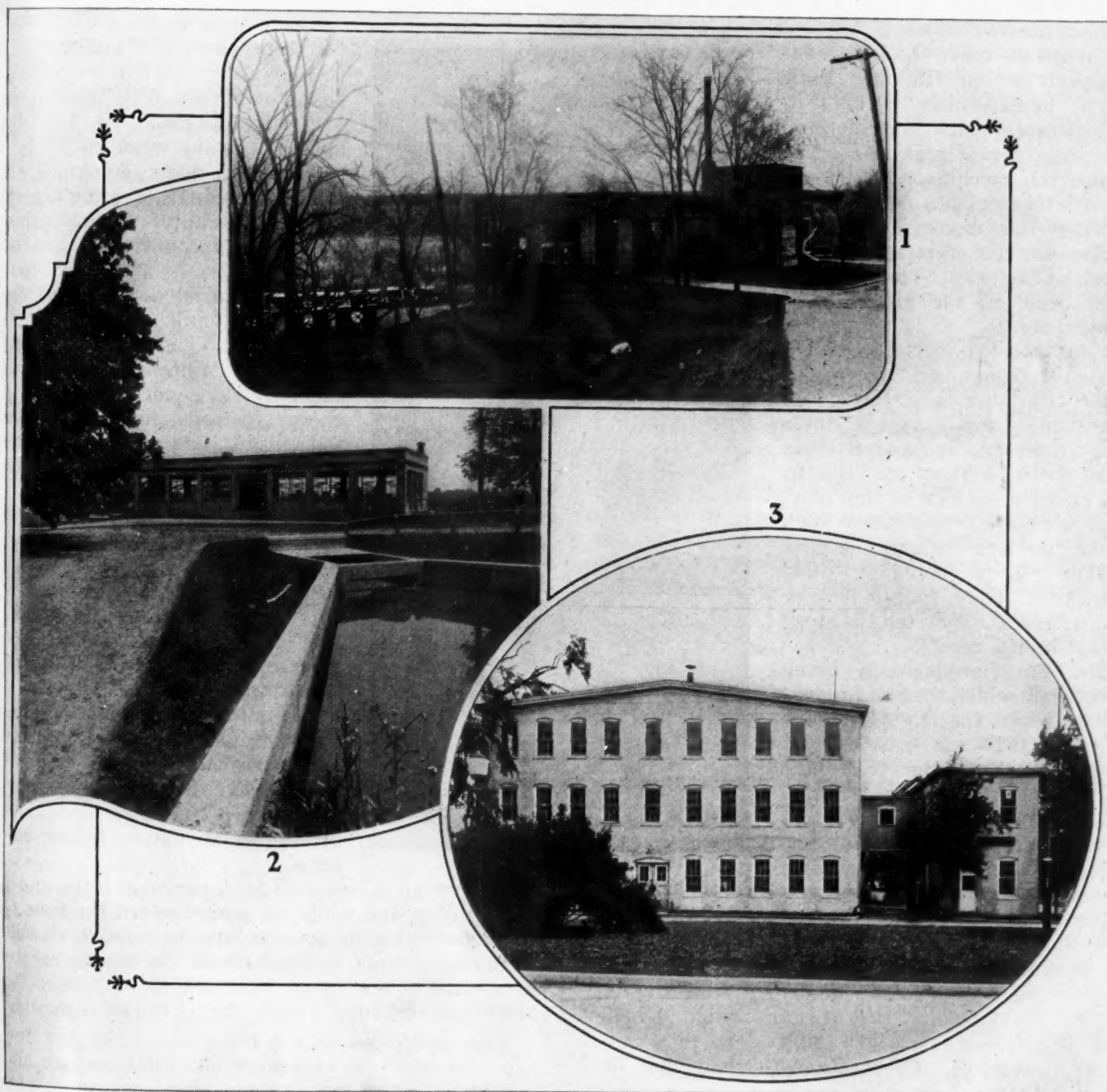
In each village there is a long waiting list of people

who want to get employment in the Ford shop and many inquiries come from Detroit families who want to move into the country. These latter have not been encouraged, however, as Ford wants to serve the village people and will only employ those who have lived in the respective villages for at least six months. He is working slowly so as to make sure how the plan works out before he develops it further. At present there are four village industries in active operation while three others, at Waterford, Newburgh and Beals are being planned.

At all of the plants in operation foremen and workers told the same story.

"How have the farmers taken to Ford's new idea?" I asked one foreman.

"Well, we've lots of 'em working here, paying off their taxes and mortgages. They figure that \$6 a



1—The Northville plant employs 380 men who formerly had to go to Highland Park every day. 2—150 girls are employed at Phoenix. 3—The work carried to the worker plan has reduced production costs by one-third at Plymouth, one-half at Northville

day for eight hours here is a vacation compared to twelve hours on the farm for an uncertain income. But none of our men are heavy farmers. They have about 25 to 50 acres. It is pretty hard for a man to manage a big tract of land after working all day at a machine. During low water we've been working only four days a week, and most of the boys are tickled to death to get the extra day in the fields."

"The chief thing that Ford has done," concluded another, "is to bring the city worker out to the country. A lot of us used to commute all the way from Northville to Detroit. Now instead of hanging to a strap twice a day, I walk across the street to work."

The foremen all agreed on one other point, equally important. Cost of production, since they had moved to the country, had been cut at Phoenix by 18 per cent., at Plymouth 33 per cent, at Nankin and Northville 50 per cent. Why? I'll let Mr. Ford explain that in his own words.

"When we made those particular parts at our Highland Park plant," he explained, "we did it in departments which were more or less insignificant cogs in a great industrial machine. When we moved these plants out into the country they became individual factories. The foremen became heads of factories. The workmen took pride in the place. They lived there.

"But most important of all, labor turnover was cut down. In a big city labor is performed by transients, usually single men. They come and go, and it costs a lot to break them in. Out in the country we can employ married men who own their own homes and are with us the year round. They become skilled workmen. Here, take a look at these figures. They tell the story better than I can."

Mr. Ford produced a typed sheet upon which the cost of making valves at the Highland Park plant in 1920 was estimated at 9½ cents. At the Northville plant in 1923 they cost 4 cents. A closer scrutiny of the sheet showed that when the plant was first moved to Northville the time required for producing each valve was 3.5 minutes. Later as the skill of the workmen improved production time stood at 1.26 minutes.

"Do you intend to build any model towns in conjunction with your village factories?" I asked.

"No, I am against that sort of thing. I believe that if people want to get things done they can do them themselves. Cooperate with them, but don't hamper them.

"Take that first village you visited—Nankin. Only fourteen houses, but they are putting in their own

sewerage and electricity. And they are not borrowing a lot of money to do it. Why not? Because they are getting good wages every day, living cheaply on their lands and can afford these improvements. We are helping them, of course. We furnish electricity free and their water. But they are doing most of it themselves, even to the extent of digging a well for one old man who is 72 and can't work.

"At another village, Flat Rock, we put in a dam which serves as a bridge for the Detroit, Toledo and Ironton Railroad, also as a road for the public, and holds back enough water to run our glass mill and to supply the local demand. Before we built our water works we had a town meeting and made a proposition to build a reservoir large enough to supply the entire town, if the local people would foot a certain per cent of the bill. Except for one vote it was unanimously adopted, and we put up a water works with a capacity of 1,000,000 gal., which will take care of the town's expansion for fifteen years, even though its population has already increased by 300 since our plant went up."

"There's a change coming," Mr. Ford concluded; "a mingling of agriculture and industry that will do this country no end of good. There is a general tendency toward decentralization. Our flour mills and packing houses are no longer entirely centralized at Minneapolis and Chicago. Our creameries, butter and cheese factories have moved to the villages, and our cotton mills have shifted to the South, nearer their raw materials.

"Isolation and monotony have driven millions from the city, but under this new decentralization farmers can live in the villages, enjoy the benefits of community life, and drive out to their farms for the planting, cultivating and harvesting.

"We all need changes. I sometimes think that the prejudice and narrowness of the present day is due to our intense specialization. If we saw more sides of life we should be better balanced.

"Every man is better off for a period of work under the open sky, and while we cannot afford the time to go off for three or four months a year to dawdle around some fancy summer resort, yet we can escape the routine of the factory and the monotony of the farm by an exchange of labor during the slack seasons.

"This new movement is being helped by the new farmers—men who once were city fellows, keen and energetic. There is no reason why farming and industry combined should not be one of the pleasantest and most profitable occupations in the world."



Keystone

Locomobile Makes Many Detailed Changes to Lengthen Life of Car

Engine power has been increased, frame stiffened and potential sources of noise have been eliminated. Aluminum pistons, full pressure lubrication and self-adjusting spring shackles adopted.

By P. M. Heldt

NUMEROUS improvements in details of design have been made in the Locomobile 48, chiefly with a view to keeping the car "like new" longer or making it possible to keep it so. In addition, the power of the engine has been increased, the frame has been stiffened, the fuel economy improved and factors tending toward unequal distribution and roughness in engine operation have been eliminated. The new series is known as the 19,000.

The six cylinder Locomobile engine now develops as high as 107 hp. on the brake at 2150 r.p.m. and the four passenger stock car is said to be capable of a speed of 76 m.p.h. The compression pressure has been increased slightly, the compression volume now consisting only 23 per cent of the total, instead of 25 per cent, as previously. Catalyting, a process consisting of covering the surface of the combustion chamber wall with a preparation having catalytic properties, similar to those of the material used in Welsbach gas mantles, is now standard practice.

Aluminum alloy pistons cast in permanent molds have been substituted for cast iron pistons, whereby the weight of the piston with rings has been reduced from 4 lb. 6 oz. to 2 lbs. 8 oz. These pistons are of the constant clearance type and have the piston pin bushings cast in. Ordinarily these bushings will wear as long as the pistons themselves, but should the wrist pins develop play first, this can be remedied by reaming the bushings for an oversize piston pin. The bushings are helically grooved on the outside in opposite directions, so they are securely anchored in the piston bosses. Four narrow piston rings ($\frac{1}{8}$ in.) are used, all above the piston pin. The piston is formed with three substantial interior flanges, one at the open end, a second at the bosses and the third directly below the ring belt, being separated from the latter by the circumferential slots. The design of the piston is such as to make it possible to operate with a skirt clearance of 0.0035 in. on a piston of $4\frac{1}{2}$ in. diameter.

Cylinders Now Lapped

The cylinders are now lapped to obtain a better wearing surface from the start. Each cylinder of the twin block is lapped separately for six minutes, 0.0003 in. of metal being removed, the cylinder block being slowly rotated around the cylinder axis during the process while a dummy piston is being reciprocated in it.

The top half of the crankcase remains of bronze, but the lower half, which is an aluminum casting, is now made of heavier section and also is ribbed and tied to the top half by an increased number of bolts, so that the rigidity of the crankcase as a whole has been materially increased.

Lubrication is now entirely by force feed. The dry sump system has been retained, whereby the oil collecting at the bottom of the crankcase is drawn from both ends by

a pump and delivered into the sump, from which latter the oil is forced to the different bearings by another pump. Through an oil distributor pipe extending the length of the crankcase, oil is delivered directly to each of the seven main bearings; thence, it passes through holes drilled in the crankshaft to the crankpin bearings and through tubes extending up the connecting rods to the piston pin bearings. The bearings are cut with circumferential oil grooves, which are slightly inclined to prevent the wearing of a groove on the shaft but not sufficiently inclined to interrupt communication with the oil hole in the shaft.

A rather interesting method is employed for the control of the oil pressure in accordance with the load on the engine. Located on top of the camshaft gear housing and communicating with the forward end of the oil distributing pipe is an oil pressure control valve. This valve is held to its seat by a coiled spring which is located inside a Sylphon bellows. The inside of the bellows communicates through a small bore tube with the inlet manifold, the tube being carried into the center of the manifold and having its end turned back, so as to prevent liquid gasoline in the manifold from getting into it.

Oil Pressure Control

If the control valve were subjected only to the pressure of the coiled spring, it would tend to maintain the pressure on the oil constant, causing the pressure relief valve to open when a certain pressure had been reached. Practically this same pressure will be maintained on the oil in the present case when the engine is working under considerable load, so that there is very little vacuum in the manifold. But when the engine is throttled down and there is, consequently, considerable vacuum in the inlet manifold, this vacuum is communicated to the Sylphon, which tends to contract, counteracting the spring, with the result that the relief valve will open at a lower oil pressure. The advantage resulting from the use of the Sylphon for this purpose is that there is no communication between the oiling system and the inlet manifold so that no oil can get into the manifold.

The pinion on the crankshaft meshing with the two camshaft gears is now mounted loosely on the shaft and driven through a flexible coupling consisting of a jaw coupling, the driving faces of which are separated by coiled springs. The object of this is to prevent or relieve shocks to the camshaft gearing, resulting from torsional flexure of the crankshaft. A Lanchester vibration damper is used to prevent the building up of torsional vibration due to synchronism, which feature, however, is not new.

Cobalt-chrome steel exhaust valves are now used; the width of the seats of these valves has been reduced from $\frac{5}{32}$ to $\frac{3}{32}$ in. and the lift increased from $\frac{3}{8}$ to $\frac{11}{32}$ in. Felt lubricators are now provided on the ex-

haust valve stems. These keep the valves covered with a film of lubricant and prevents corrosion and sticking.

The cams are substantially of the constant acceleration type, with slightly hollow flanks, and have unusually long ramps, which latter lift the cam followers at a constant rate. The inlet valve opens 6 deg. before dead center and closes 46 deg. past dead center; the exhaust valve opens 47 deg. ahead of dead center and closes 5 deg. past dead center. This timing is rather unusual, as the inlet and exhaust periods overlap to quite an extent. The inlet and exhaust cams are identical and the valve periods therefore are equal. A clearance of 0.002 in. is allowed on the inlet valves and 0.004 in. on the exhaust valves.

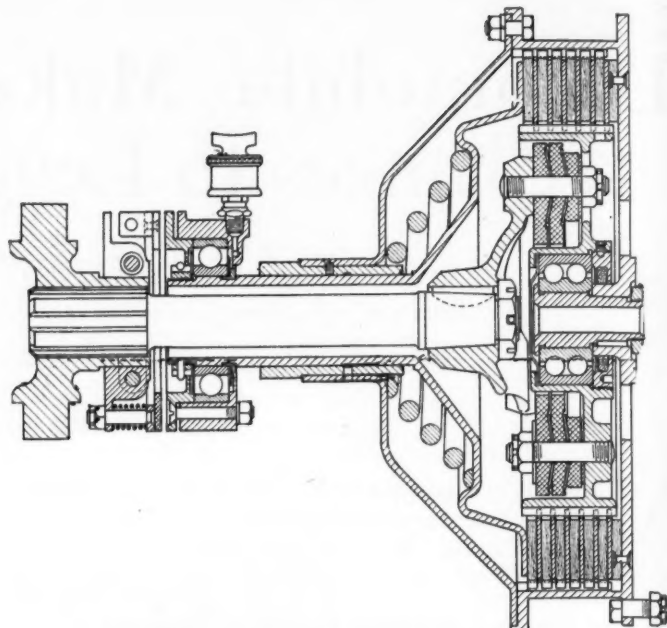
Slight changes have been made in the form of the water jacketed aluminum inlet manifold to prevent the adherence of any particles of liquid fuel to the walls and the carburetor main air inlet has been fitted with a trumpet to ease the air flow.

In order to facilitate starting in cold weather and at the same time obviate danger of damage to the engine by abuse of the choke valve, a primer is provided on the inlet manifold and the action of the choke is limited by cutting away part of the valve disk. The Locomobile has pressure fuel feed and the primer consists of a branch fuel line opening directly into the vertical section of the inlet manifold, this line being controlled by a valve operated from the dash. When the valve is opened, fuel is injected into the manifold by the pressure in the fuel tank.

Means for Taking Up End Play

The pump and magneto shaft gears are now provided with means for adjusting the end play. A hardened steel button is inserted in the end of the shaft, and a setscrew with lock nut is screwed into the end of the bearing. To adjust the end play the setscrew is screwed up tight and then unscrewed slightly to give about 0.0001 in. clearance, after which it is locked.

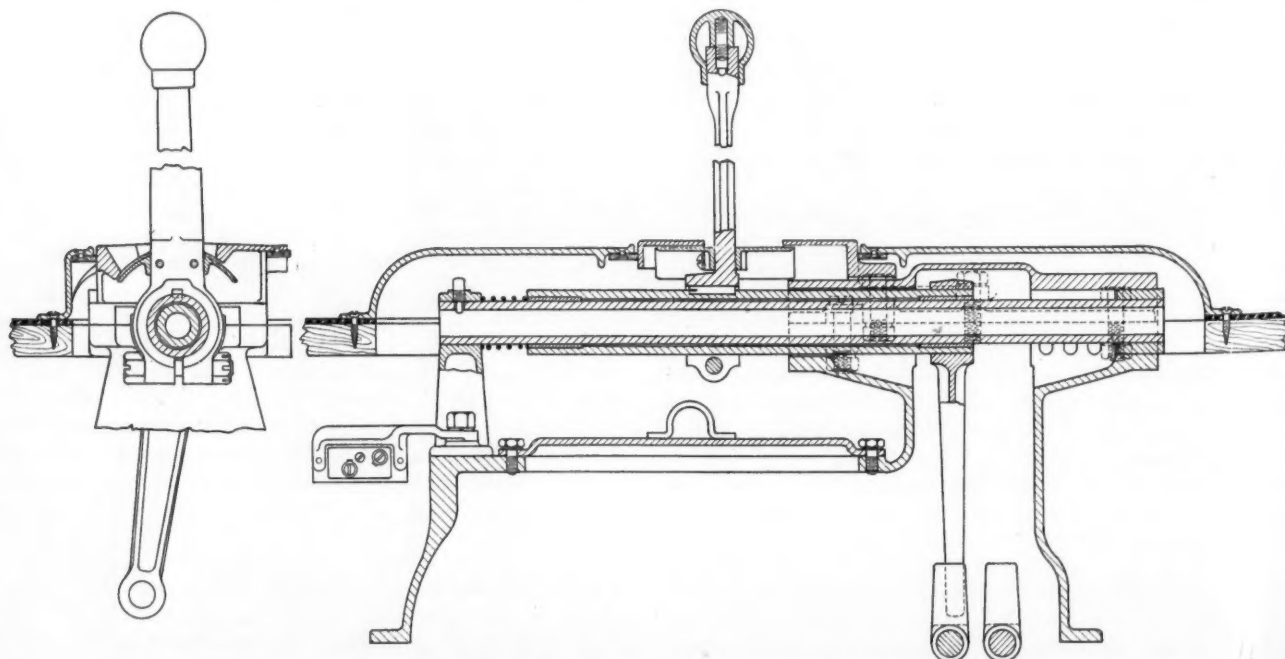
About a year ago the Locomobile company adopted molded Raybestos clutch disks. In the course of a certain period of use the surfaces of these disks become glazed, and then the surface is practically permanent, but before this occurs a certain amount of dust wears



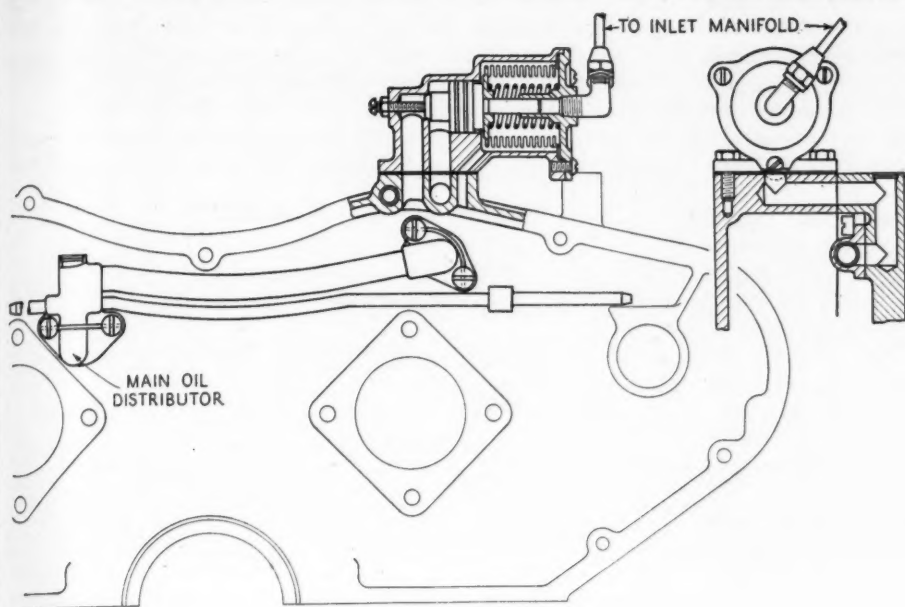
Locomobile dry disk clutch with Raybestos molded driving disks

off and the accumulation of this dust in the clutch housing naturally affects the frictional properties of the disks. In order to hasten the formation of the final surface condition, from 3 to 5 per cent of powdered graphite is now incorporated with the material of the disks.

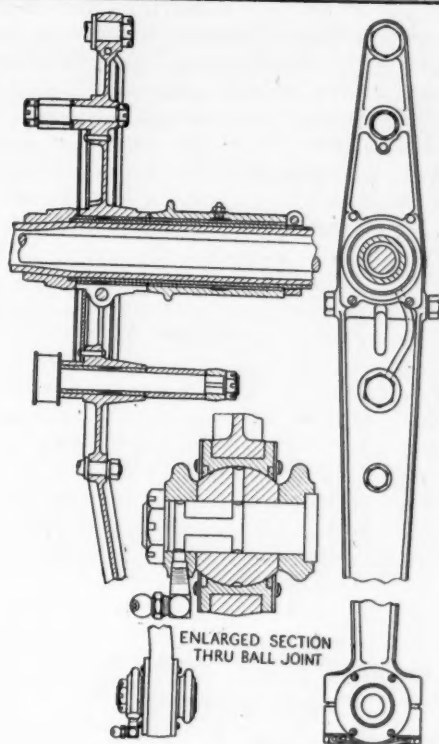
With the object of making gear shifting easier and rendering it more quiet, the shifting mechanism and gate have been redesigned. The gate or slotted plate has been placed closer to the axis of the gear lever, which makes the slots very much shorter, and the plate is now made flat and is set flush with the floorboard. Formerly the ball head of the gear lever had to be depressed before the reverse gear could be engaged, but this has now been rendered unnecessary by slightly offsetting the low gear and reverse slots so that, coming out of the low gear slot, the lever has to be slid farther toward the left before it will enter the reverse slot. The stuffing boxes



Showing the details of the new gearshift lever and gate

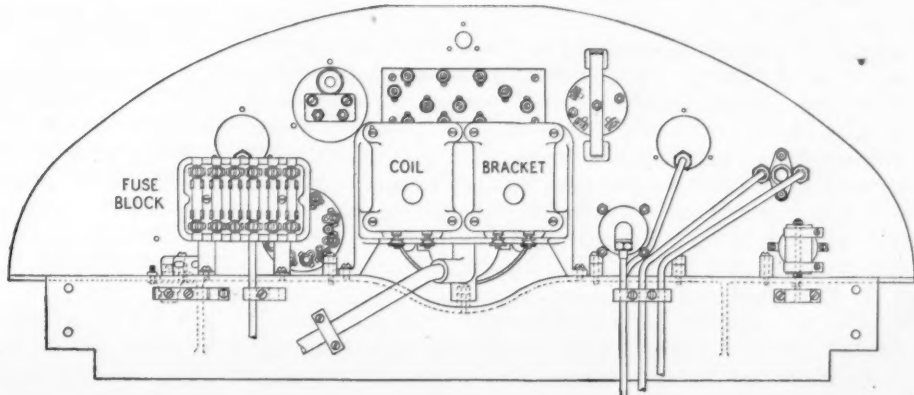
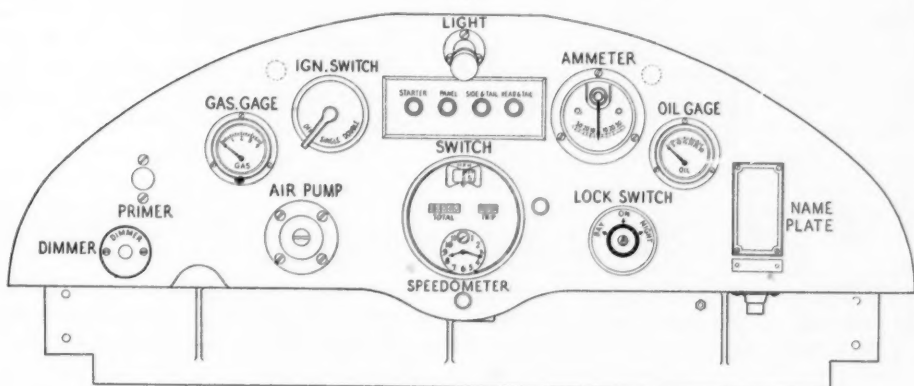
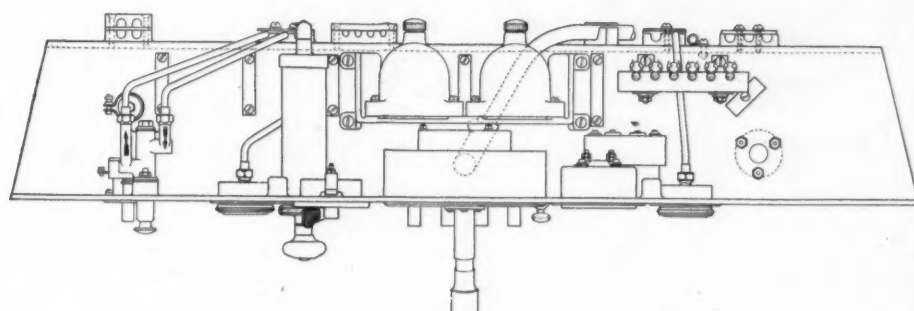
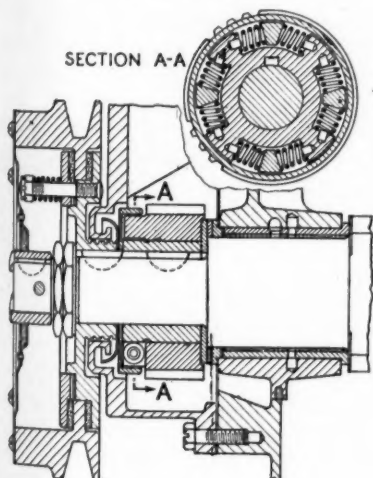


Above—Sylphon type oil pressure regulator mounted on camshaft gear housing.



Right—Two views of the radius rod, showing clamping bolt near axle tube and new design of ball front joint

Below—Cushioned camshaft gear drive pinion



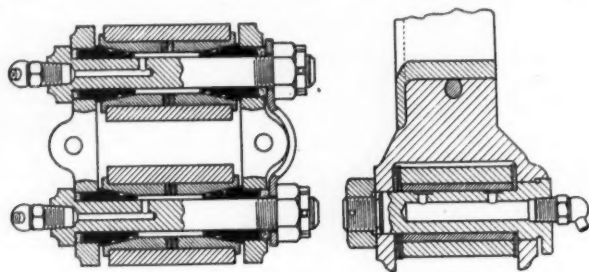
Right—Top, front and rear views of cowl and instrument board

on the transmission bearings have been replaced by lead screws. The speedometer drive is now taken from the rear of the transmission through a bronze driving and a steel driven helical gear.

The frame section has been increased in depth by 2 in. at the middle, all other dimensions remaining the same. A removable torsion bar has been added in front to increase the rigidity of the frame.

No change of any consequence has been made in the front brakes, although the shape of the cams has been slightly altered to give greater multiplication of the brake pressure.

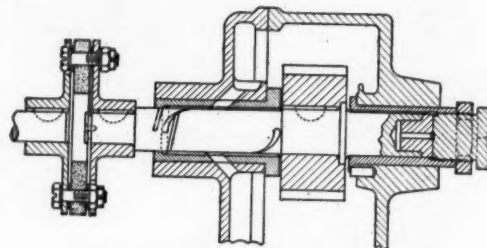
One of the important changes is the provision of automatic take ups for both radial and end play in the spring shackles. A sectional view of this new shackle, which is used at both ends of the rear and at the rear end of the front springs, is shown herewith. A hollow conical plug of hardened steel is set into each end of each shackle link, being clamped in position by a bolt in the link. These plugs bear in hardened steel bushings inserted in the spring eye, one from each side, with a cork washer between them so as to form an oil seal.



Self-adjusting spring shackle and front spring horn with means for hand adjustment

The shackle bolts pass through the hollow conical plugs, and a flat spring curving over the bolt lug of the shackle link is threaded over their ends and put under about 200 lb. pressure by the shackle bolt nuts. The angle of the conical plugs (22 deg. 30 min.) is such as to prevent freezing of the bearing surfaces, and the spring keeps the surfaces in contact at all times. At the forward end of the front springs there is no shackle, and hand adjustment of the end play is provided for.

The radius rods, which have been a feature of the Locomobile from the beginning, have been retained, but changes have been made in the design at both ends. These rods were formerly adjustable for length at their forward end and had a universal connection to the frame there. The adjustment for length has been done away with as unnecessary in the new design, and the



Showing means for taking up end play in water pump drive (also used for magneto drive)

universal connection has been redesigned so as to give increased bearing surface and better protection against the entrance of dust. A hardened steel ball is fitted over the pin of the joint and has a bearing in a bronze bushing fitted into the end of the radius rod, dust washers and retaining plates being fitted to the ends of the bushing.

At the rear end the radius rod is now clamped to a sleeve which surrounds the axle tube and extends through the spring saddle.

The muffler has been greatly simplified in design and has been rendered more effective, while at the same time the back pressure, which was formerly about 0.7 lb per sq. in. under full load operating conditions, has been practically halved.

The Zerk system of chassis lubrication has been standardized.

In the future the Locomobile Company will market only a single chassis, eliminating the variations offered heretofore, which related to steering column position, gearshift lever position, pedal position, fenders, running boards and tool compartment. The steering column is now made adjustable as to angle of rake, being trunion-mounted.

What an Analysis of Road Service Shows

THERE are few things so distressing to car users as failures of the car on the road and the necessity for calling a tow car, with the attendant delay and expense. For this reason car makers should seek to learn and take steps to avoid troubles which involve this form of annoyance.

The Cincinnati Automobile Club, which furnishes emergency road service to its members, published an analysis of 3382 road service calls answered during the year ending April 1, 1924. This shows that 28 per cent were occasioned by starter trouble, 10 per cent by tire trouble, 7.2 per cent by battery trouble, 3.8 ignition, 0.6 carbureter, 6.4 gas and oil, 1.4 clutch, 2.6 wrecks and 17.3 miscellaneous. Nine and seven-tenths per cent of the calls were cancelled, 0.7 per cent were false alarms and 12.3 per cent required tow in for reasons not given.

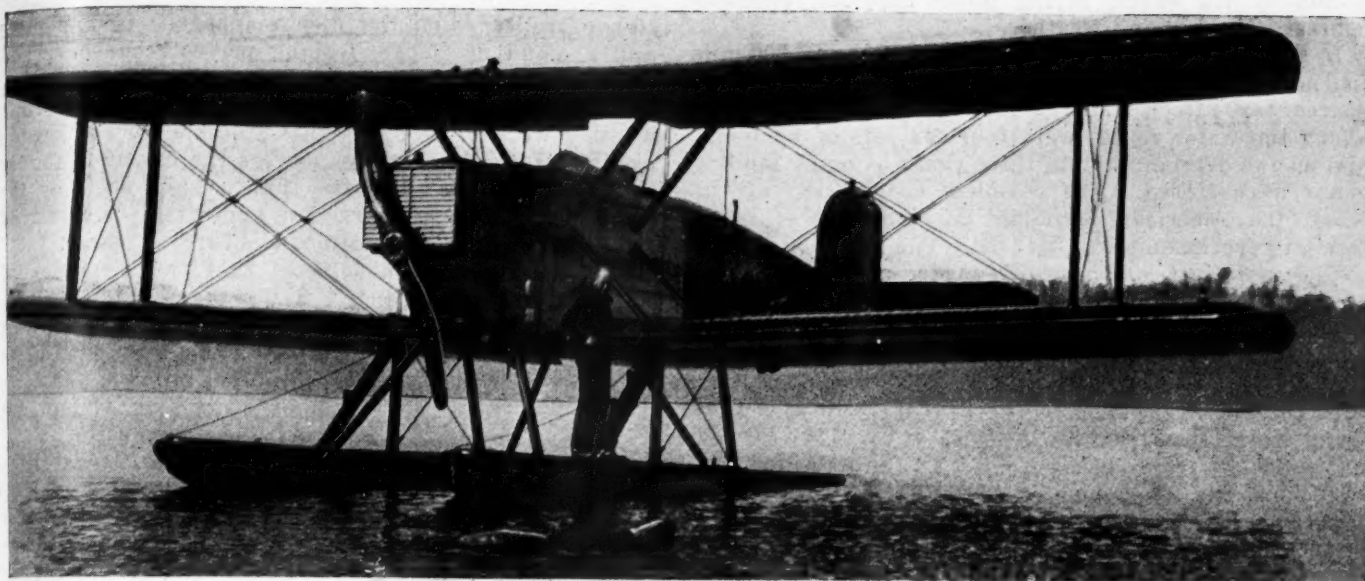
In the case of the Royal Automobile Club of London, England, about 45 per cent of breakdowns reported as occurring on the road were due to powerplant failures, 30 per cent to parts of the drive back of the gearset, 7

per cent each to front axle and steering gear, nearly 2 per cent to lighting and 10.2 per cent to accidents. Powerplant troubles are divided as follows: Ignition 18.4 per cent, lubrication 5.7, cylinders and piston 4.3, clutch and gearset 4.1 per cent each, carbureter 3.4, starter 1.2, valves and water circulation 1.1 each, crankshaft 1.0 and valve drive 0.9.

Axle shaft breakage amounted to 13 per cent of the total, universal trouble to 4.3, brakes to 1.4, final drive to 1.5 and differential to 1.6.

While the figures are not truly comparative in all respects, it is interesting to note the much higher percentage of casualties due to ignition trouble in England and the very high percentage of trouble due to starters in this country.

CAR Carburetion Requirements is the title of a bulletin just issued by Purdue University Engineering Experiment Station, the authors being C. S. Kegerreis and O. Chenoweth.



Keystone

The New Orleans with Lieutenant Eric Nelson was for a time reported lost some twenty-five miles off the Orkney Islands. Plane with pontoons and load weighs 7915 pounds

What Is the World Flight Going to Mean to Commercial Aviation?

Fire hazard has largely been eliminated, heavy loads have been carried, variegated climates with abrupt changes can be negotiated and speed and endurance are proved.

By Alexander Klemin

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THE world cruise has been a test of the reliability and endurance of the modern airplane and its engine under the most strenuous conditions. It has been convincing, because the planes used were thoroughly conventional, and while remodeled to have greater gas capacity, they were in other respect "stock" models.

The flight taught that the fire hazard in airplanes already has been largely eliminated, that the airplane has very excellent commercial possibilities, proved the reliability of the general fuselage design, and indicated possibilities for further development in powerplants.

Douglas planes were selected for the world flight after careful consideration of all available types. Biplanes of standard design, they are characterized throughout by extreme ruggedness and simplicity, and their most noteworthy feature is their carrying capacity.

Designed as land or water types, and readily convertible by the interchange of ordinary landing gear to pontoons and vice versa, they weigh, without gasoline, oil or passengers, 5300 lb. as seaplanes and 4300 lb. as landplanes. With a passenger and fuel load of 450 gal., the gross weights are 7915 and 6915 lb., with speeds of 100 miles and 103 miles an hour for the seaplane and landplane respectively.

Four hundred and fifty gallons is enough for a cruise of 18 hr., but in an emergency the planes can comfortably carry 600 gal. They can make a non-stop flight of 2200 miles loaded with all the multifarious equipment and

supplies which long distance flying involves powered by one 420 hp. Liberty motor.

For ordinary commercial flying such long ranges are useless, and the excessive gasoline loads might well be cut down to give place to some 1500 lb. of pay load. Douglas cruisers can be classified as commercial airplanes. They are not fast in the light of present-day airplane practice, but they possess adequate commercial speed. While the trend of modern design is all toward metal construction, these cruisers were largely built of wood, with only the fuselage and landing struts of steel tubing.

The Liberty motor remained practically unchanged from its original design. The only modifications were in the improvement of the air intake passages, rearranged to prevent back-firing and the resultant fire dangers; gasoline pumps specially designed to reduce danger from gasoline under pressure; and stronger timing gears to operate the two ignition systems. On the whole, planes and engines represented standard practice of the day.

The story of the flight will be described again and again in newspapers, magazines and lectures. We need only stress the difficulties of the cruise and the extraordinary effort in organization which preceded it.

The Army Air Service made its arrangements with tremendous thoroughness and began real work at least twelve months before the actual day of departure. Its advance officers traveled and worked in the furthestmost

points of the earth, laying down supplies, charting courses and studying weather.

In fifty-five regular stops, spread over the 25,000-mile journey, were spare engines for six changes of motor, spares for fifteen Liberty motors and eight planes. Along the water routes were fourteen sets of pontoons, and on the overland flights three times as many landing gears were stored. The complete cooperation of the Navy, the American Merchant Marine, and of many foreign governments was secured. The selection of personnel was just as carefully made, and experienced officers were given a special course of training.

The course and schedule were determined with weather always in view. The route offered many unpleasant prospects, nevertheless, with the stormy, cold and foggy North Pacific crossing, possible typhoons in the China Sea, sweltering heat, and the rainy season in Indo-China, Burma and India; torrid deserts in India, Persia and Asia Minor; and after the comparative security of Europe the dangerous North Atlantic crossing. Overcoming these difficulties meant all the more credit to our Air Service and to modern aviation.

Magellan's circumnavigation of the world in 1519, more than 400 years ago, did not immediately bear fruit, nor were its results understood fully at the time. But it did fire men's imagination and made the sixteenth century one of glorious adventure and discovery. Perhaps the full appreciation of the world flight will not dawn on us for years to come.

Even the technical lessons regarding planes, engines and equipment will take months to be interpreted. The fliers have copious notes and diaries, invaluable information which will undoubtedly appear in the form of reports, articles and lectures; but while the epic adventure is still fresh and vivid in our minds, many conclusions already stand out.

The first significant fact that emerges is that fire hazard in airplanes has been largely eliminated; the gasoline system was redesigned from this point of view. The careful work was fully justified, as is shown by the record of the entire flight, in which not a sign of fire appeared.

Graphic testimony to this effect is given by a description in the *London Aeroplane* of the reception of the American fliers at Croydon, where Lieut. Eric Nelson and his mechanic gave the crowd a real thrill. As the machine came to rest after bumping over the aerodrome and shaking up any gasoline which could escape in the machine, the mechanic calmly produced a cigarette and matches from the recesses of his flying coat, tucked himself well down in the cockpit, where the gas might readily be expected to accumulate, and lit up.

To the English aviators, trained to the idea that smoking in an airplane is like looking for a gas leak with

a candle, the act looked like premeditated suicide. The sigh of relief when the flier reappeared in one piece and a cloud of smoke, looking perfectly unconcerned, was a great tribute to fire prevention engineering.

Discussion is always rife in the technical press as to whether we have any airplanes suitable for commercial use. This flight certainly answers the question, for the carrying capacity indicates that a ship such as the Douglas cruiser can carry an appreciable commercial load with not too great an expenditure of power.

The flight also demonstrates that the airplane has reliability and endurance. True, the fliers were constantly overhauling their planes, using spare parts, even new sets of wings and pontoons, but not one real failure of the airplane structure or controlling system was forthcoming.

Even the nastiest landings, such as that of Martin at Seattle, did not put the ships out of commission. At Brough, the expert English aircraft men working on the overhaul of the planes were astounded to learn that the fresh looking varnish was that which the Douglas company had applied at Santa Monica, Cal., although the ships had flown 18,000 miles in all climates and weathers.

At Croydon the only defect which other English observers noted was that the fabric on the under side of every upper plane showed a series of waves and puckers just round and in front of the inner hinge of the ailerons. Owing to the great length of the unsupported span

of the rear spar, the ailerons seemed to bend the spar at every strong control, and hence the puckers. But in all other respects the planes appeared to be in perfect condition.

The same encomium cannot be placed on the engine. Not only did the engines need to be replaced six times, but throughout they needed far more attention than the planes. Engine failure forced down Major Martin off the shores of Kantak, and caused the loss of Lieutenant Wade's plane between the Faroe Islands and Iceland.

The engine has always been the main reason for uneasiness. It should be pointed out, however, that while not available in the same quantities, or as cheaply replaced, we have even now engines which far surpass the Liberty in endurance. The 573 hr. full power endurance test in 1923 of a Wright motor, for example, would have theoretically given a cruising radius sufficient to take a seaplane around the world at the equator.

In flying from Akyab, Burma, on June 26, to Calcutta, a distance of only 400 miles, the aviators had to stop for refueling at Chittagong, Province of Bombay. The wooden pontoons had soaked up much water, but inability to carry the full fuel load was also due to the fact that the heat and dampness had affected the dope covering on the wings, and the fact that the warm tropical air was so much lighter.

IN announcing the preparations for the Army Air Service flight round the world, General Mason M. Patrick stated that the purposes of the project were: to demonstrate the feasibility of establishing aerial communication with all the countries of the world; the practicability of travel by air through regions where surface transportation did not exist, or at best was slow, tedious and uncertain; to prove the ability of modern types of aircraft to operate under all climatic conditions; to stimulate the adaptation of aircraft to the needs of commerce; to bring before the people of the world the excellence of American products in the interest of our American aircraft industry, and lastly to bring to the United States the honor of being the first nation to fly around the world.

How far these purposes have been achieved, and what lessons have been learned for the furthering of commercial air transport remains to be determined in the future.

One short cable item which came leads to three distinct suggestions: pontoons for real service seaplanes should be of metal to minimize soakage; the doped linen or cotton covering of the wings must yield to thin sheet duralumin, at least for use in warm climates; and, finally, ships in tropical climates must be designed with a lesser loading per square foot to compensate for the lighter atmosphere.

It is interesting to note that just as the original plans had provided, the world cruisers were equipped with pontoons at Seattle, re-equipped with landing gears at Calcutta, and again fitted out with pontoons at Brough. Because of the vast uninhabited areas traversed, the preparation of suitable landing fields along the entire route would have been an all but impossible undertaking, and the most feasible plan was to follow coast lines and use pontoons so as to make use of every sheltered harbor.

Undoubtedly the plan was wise, and it can also be learned from this that commercial use of planes will always be more practicable and more readily come into being wherever there is a coast line with protected harbors to follow. There is also in the flight a great argument for the amphibian. The wonderful success of such a plane as the recently tested Loening amphibian, the consistent building of amphibians by the English, and the experiences of this flight lead to the strong conclusion that amphibians we must and shall have.

The question might be asked why, when the non-stop transcontinental flight was 2600 miles, and the cruising radius of the Douglas ships was 2200 miles, a smaller

number of longer flights were not made to simplify the problem. The answer is, that the strain on the personnel for long flights of this character would have been too great.

Again, the Liberty engine could not have been counted upon to withstand continuously the strains of more prolonged non-stop flights. But, on the other hand, it appears very clearly that non-stop flights of 500, and even 600 miles may be definitely counted as possible in the commercial operation of aircraft.

The human elements must always be considered in aviation just as in any other form of transportation. The world fliers got far less rest than commercial pilots would in ordinary operations, yet they surprised both London and Paris by their perfect physical fitness despite the fact that they were dog-tired.

They would not even see Paris the night they arrived, but they were in perfect condition and in excellent spirits. Months of flying in stretches 600 and more miles at a time, in bitter cold and tropical heat had left the men lean and bronzed, but in perfect health. This is a valuable indication that there is no part of the globe in which a healthy white man cannot fly; and commercial pilots would never have to fly under conditions anywhere near so difficult or temperatures so variegated.

Another remarkable lesson of the flight is that, given sufficient skill and experience, a pilot can land almost anywhere. On their arrival at Croydon certain English pilots had made bets that the Americans would bounce on the ridge in the middle of the aerodrome.



Colonel Kenyon Joyce, U. S. Military Attaché, Lieutenants Smith, Ogden, Wade and Nelson with their mechanics at Croydon, England, where they arrived on July 16

But the visitors, with their experience of alighting on land and water and ice, golf links, race courses and deserts, made a perfect landing on the stranger's man-trap of the Croydon Aerodrome. These facts have an important bearing in the discussion of rugged country as a bar to commercial air transportation.

This ability of skilled pilots to land anywhere does not minimize, however, the importance of well-organized airways. It is true that the world cruise made a wonderful record in flying from Calcutta to Constantinople, a distance of over 4300 miles, in 12 days; but it was not until the airways of Southeastern and Central Europe were reached that the pilots found their flight a pleasure trip from welcoming capital to welcoming capital.

Flight from Vienna to Paris

As an indication of the mastery of the air achieved with proper support may be mentioned the flight from Vienna to Strasbourg and Paris. The aviators landed in Vienna on July 13 at 3.30 in the afternoon. Bent on reaching Paris in time for the July 14 celebrations, they disregarded ominous weather reports; flew for three hours very low, owing to low hanging clouds, crossed the Alps without hesitation and reached Paris in time.

In the matter of speed, also, there is no doubt that even such comparatively slow ships as the Douglas cruisers give us all we want. In the difficult North Pacific crossings, the planes were actually making much slower time than ordinary methods of transportation. But what a striking comparison the two weeks' unrehearsed flight from Calcutta to London made with the month's usual journey by well-organized steamer and railway routes!

Much greater difficulties had been expected in the matter of navigation than were actually encountered. True, fog proved a great enemy, causing the destruction of Major Martin's flagship, but instruments and methods proved on the whole surprisingly satisfactory.

For all practical purposes the problem of aerial navigation has been largely solved; but, on the other hand, the world flight teaches the important lesson that commercial flying is not dependent on the planes, pilots and engines alone. There must be complete ground organization with fields, spares and mechanics, weather and radio service, naval and coastal stations. In addition to good equipment, the problem is to coordinate all scientific and engineering agencies to one great end.

A very important viewpoint has been brought up by military authorities. In case of war, given the same equipment and equally good ground organization, could not 10,000 machines be sent over the route just blazed by the world fliers? The day may be coming when war will mean the sailing of vast aerial armadas, and even the United States, considered habitually as distant from all possible seats of war, might not be immune to devastating attacks from the air.

Perhaps the existence of the airplane may tend to minimize the chance of war. One of the finest results of the flight was the exchange of courtesies between nations. Witness the enthusiastic welcome our men received in Japan. All thought of the exclusion problem was forgotten in the great reception and the Japanese Navy certainly spared no pains to help.

Vienna, an erstwhile enemy capital, was no wit behind. The flight in Paris over the Arc de Triomphe, the grave of France's unknown soldier, will do much to relieve any slight misunderstandings which may have recently arisen with that great country. And when the aviators got to Croydon they actually felt as if they had already arrived home.

Finally, what does the world flight signify as far as

the prospects of commercial flying round the world are concerned? As regards the United States, the prospects are not too encouraging. Commenting on the North Pacific flight, Lieut. Lowell H. Smith, the commander succeeding Major Martin, said: "I do not believe that the North Pacific route will be practical for commercial or regular flying as long as the present type of airplane is our best. Our struggles have shown that. We have found that the movement of the storms against our route amounted to 300 miles daily."

Recent discussions in the press of a 65-hr. service, New York to Peking, are evidently premature. The difficulties of the North Atlantic crossing are quite as great.

Not only is fog ever to be feared between Scotland and Iceland, but Greenland with its rocky, mountainous, snow-covered interior, and its eastern coast, bound with ice fields 30 or 40 miles wide, is bound to be an insuperable obstacle to steady commercial flying. The difficulties of our fliers show this clearly, and the southern route followed by the Navy's NC boats means tremendously long hops.

Giant ships, with multiple powerplants, capable of thousands of miles of flight at a time, must be developed and built before any serious notion of connecting the United States with either Europe or Asia can be entertained.

The United States has again performed an altruistic task, because, while the oceans prevent the connecting up of the States with Europe and Asia in anything like the near future, other nations will find an immense stimulus in this flight.

They will chart and study meteorological conditions and can readily find suitable routes connecting Tokyo with Hongkong and Shanghai perhaps, or Calcutta with Constantinople and London. Undoubtedly, from this point of view the World Cruise will be a great stimulus and anything foreign countries do will ultimately benefit American aviation.

In any case, the great effort of our air service, its skill in organization, the ability, fortitude and perseverance of our fliers, the great showing of our planes and engines will earn immediate and lasting recognition.

At the time this is being written the aviators are preparing to make the jump from Ivigtut to Labrador.

ADDITIONAL light has been thrown on the nature of fatigue failure by experiments carried out in the metallurgical department of the National Physical Laboratory in England. It appears that slip bands occur even if the stress is confined to the safe range and are therefore not a criterion of ultimate failure, and that the conditions tending to cracking cannot be studied with crystalline aggregates, owing to the various orientations involved, but require the examination of single crystals by suitable methods.

In shafts provided with keys, if torque is transmitted through the key, the crack starts at the junction of the bottom and side of the keyway, and fracture finally occurs in the circumferential direction. Under repeated horizontal stresses shaft fracture occurs in the direction either of the plane of principal stress or of maximum shear stress. The spiral fracture has been considered characteristic of hard steels, the circumferential of soft steel, but according to the findings of the aerodynamics department the axial or circumferential fracture is normal for sound material while a small flaw or a small hole drilled into the specimen increases the principal stress and leads to helicoidal fracture.

Just Among Ourselves

All-Metal Bodies Likely in Low-Priced Line

THERE are indications that another important producer of low-priced cars soon will go into production with a line of all-steel open bodies. Experimental work on the jobs has not yet been entirely completed, and the date of announcement still is a good ways off, it is understood. Up to the present time the all-metal body has developed many distinct advantages, particularly from the manufacturing standpoint, while its comfort and utility have been improved materially since the time of its first introduction.

Around the World Without Burning Fuel

HENRY FORD'S products always seem to be doing something out of the ordinary. Just the other day it was discovered that a Ford-built engine has encircled the globe without consuming a gallon of gasoline. That's fuel economy for you. Here's the way it happened according to a note in *Aviation*. Recently workmen at the Rockwell Air Intermediate Depot, Coronado, Cal., were surprised when opening a crate containing De Havilland 4A No. 31084, built by the Dayton-Wright Co., to find installed therein Ford Liberty 12A No. 29494, Ford No. 1. This engine was the first Liberty the Ford company turned out and was completed July 18, 1918. Major H. H. Arnold, Commanding Officer of the Rockwell Air Intermediate Depot, witnessed the final test of this engine early in 1918 and received it at this depot after it had traveled from Detroit to France, arriving there too late to take part in bringing down the Huns. From

France it was re-shipped to the United States and then shipped to the Philippines. From the Islands it was re-shipped to Rockwell Field and has remained in storage since its arrival. As far as can be determined, this engine has never had any time in the air. Its entire time since coming off the test block at Detroit has been in crates, although it has traveled a distance equal to the circumference of the globe.

Car Price Curve Still Pointed Upward

OUR prediction made several months ago that car prices would go up has been fulfilled in a good many cases. The changes have been made for the most part when new models have been announced so that they have gone by almost unnoticed outside the trade. This method of making justified increases has advantages because it achieves a necessary operation without concentrating public attention unduly on the price angle of automobile buying. Moreover, it has made it easier for dealers to dispose of old models. Further increases seem likely within the next few months on the part of some companies which have not yet made advances.

Cycles or Circles— Which Will You Have?

DOES industry move in cycles or in circles? Sometimes it's a bit hard to tell which it is doing. Every once in a while it is found that the best way to solve a new merchandising problem is to revive an old idea which has been laid away in moth balls for several years.

Casting about for an answer to the vital question, "How can makers of high-priced cars get better distribution in small towns?" is one of the favorite indoor sports just now among those who enjoy conversational battledoor-and-shuttlecock on marketing topics. At one of these sessions the other day it was suggested that the old curbstone dealer idea be revived. It seems that this is a pet idea of one nationally known executive. It has been tried in a few instances, however, without any remarkable success. There's one thing about trying to answer the question above propounded: nearly everybody can tell you what's the matter with any idea suggested.

There's a Long Trail Still Ahead of the Industry

"IT'S not a good idea to talk too much about how big you are." So says an executive who takes delight in analyzing the economic and psychological idiosyncrasies of the automotive industry. He has been following trends for a long while and says that his files contain a number of articles and statements by automobile men which state definitely that 15,000,000 motor vehicles would constitute saturation for the United States. Now that we have more than 15,000,000, he points out, it is obvious to those who know the facts that we still are very far from any saturation point. But the constant talk about size and the statements previously made have a bad effect on bankers and men in other industries who are not so familiar with actual conditions. He suggests that the industry talk more about its future and less about the size of its past accomplishments. Not a bad idea, is it? N. G. S.

Gear Hobbing Machine Specially Designed for Producing Transmission Gears

Straddle housing eliminates overhang of work and hob spindle, and adds rigidity of support, which is claimed to increase speed of production, life of the hob and gears for each sharpening.

A GEAR generator specially designed for the production of automobile transmission gears has been developed by the Lees-Bradner Co., Cleveland, Ohio. It is classed as a single purpose machine, because it is intended for a single class of work, but this designation does not imply any limitation on the number of teeth that can be cut on the thread angle or on the diameter of the hob.

The outstanding feature of this new production tool is the length to which the designers have gone in securing rigidity. The conventional lines of gear hobbing machines were entirely departed from and the new machine is of quite novel appearance, though it embodies a number of old Lees-Bradner features.

In accordance with the practice followed in previous Lees-Bradner machines, the work is fed past the hob. The relative positions of the spindles and their movements are not unlike those in previous designs, but the surrounding housing is entirely different and the gear train between the hob and the work has been greatly simplified.

The housing completely surrounds the hob and the work, with the result that overhang is eliminated; besides, this arrangement has made it possible to provide an extra bearing for the work slide against the top of the housing. An unusually large tapered gib is placed between the slide and the housing at this point to permit of taking up all play.

The work spindle is gibbed to the base of the machine and is also provided with liberal bearings and a tapered

gib as an additional assurance against side movement. It has longitudinal travel for the feed and return, but is not adjustable vertically. Work of different diameters is accommodated by a vertical adjustment of the support which carries the hob spindle, thus varying the distance between the hob spindle and work spindle.

The cutter head is bolted directly to the support above mentioned. In case it is desired to change to a hob of different thread angle, the bolts securing the cutter head to the support are loosened and the head is swung about the axis of the vertical shaft which carries the power to the hob spindle. This allows for adjustment of the hob spindle through an angle of 10 deg. Since there is no occasion for using left-hand hobs in spur gear production, this adjustment is all on one side of center, and it allows of the use of right-hand hobs of any thread angle up to 10 deg. This takes in spline hobs and single, double and triple thread hobs of all pitches used for the production of automobile transmission gears.

A flywheel is mounted directly on the hob spindle, which latter is driven through a worm gear similar to that employed in motor truck axles, a bronze worm wheel on the hob spindle being driven by a worm on the vertical shaft. This worm is splined on its shaft to allow for vertical adjustment of the cutter head.

A new feature of considerable importance is found in this vertical adjustment of the cutter head (see Fig. 4). Instead of a vertical screw, a large wedge shaped casting, A, is used, which is moved horizontally upon

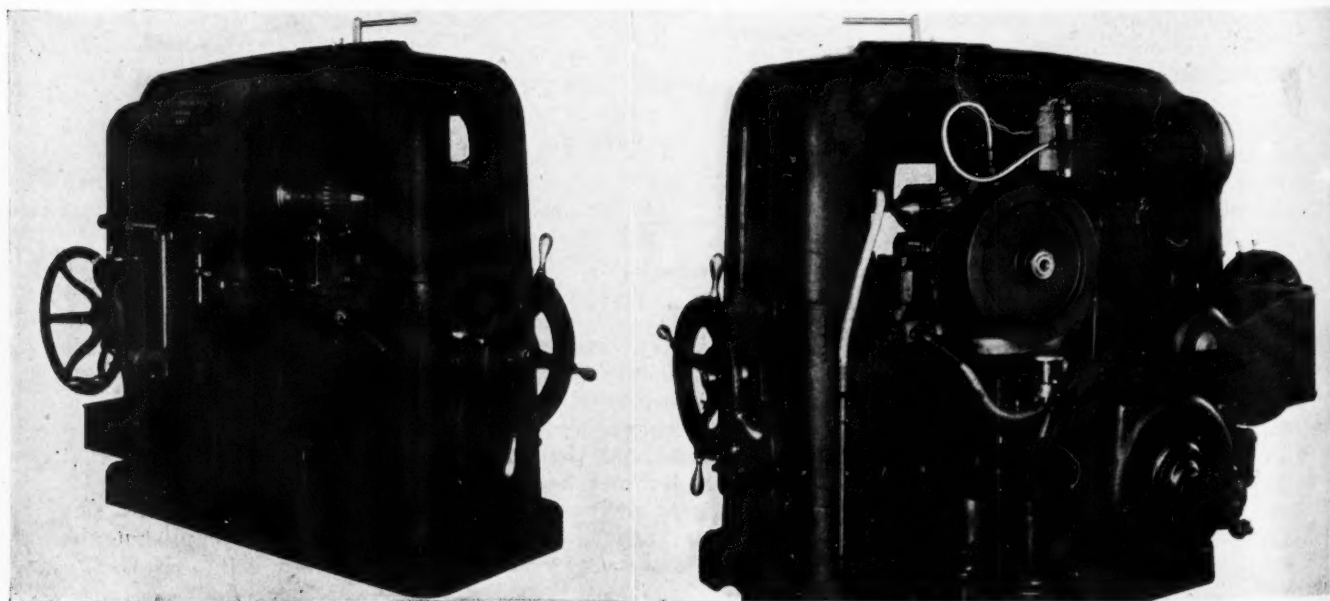


Fig. 1—Lees-Bradner single purpose gear generator. Fig. 2—Rear view of gear generator, showing driving motor, flywheel on hob spindle and connections of lubricant and coolant circulating systems

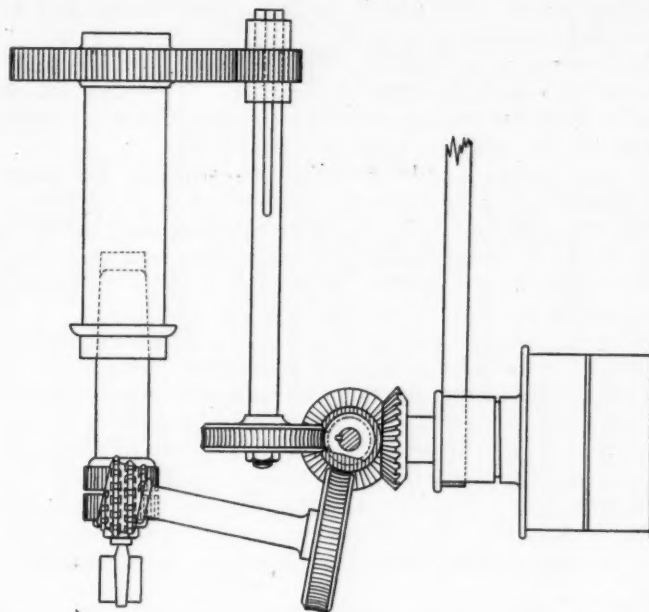
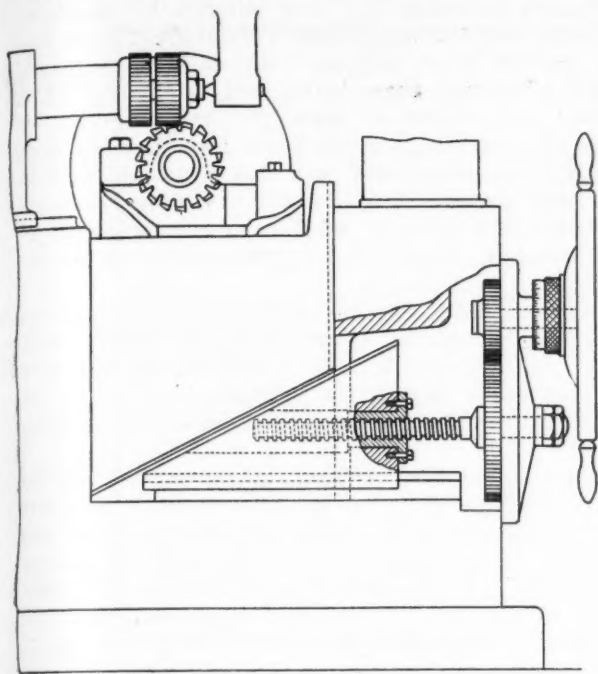


Fig. 4—Mechanism for the vertical adjustment of the cutter head. Fig. 5—Diagrammatic view of drive connections

the bed of the machine below the support to raise it and adjust the hob to the proper depth. The cutter head thus rests upon a foundation of cast iron of which the heavy bed casting is a part.

The adjusting wedge is moved horizontally by means of the large pilot-type hand wheel at the front of the machine (at the operator's right). When the hob has been adjusted to the proper depth the support which carries it is clamped to the bed of the machine by means of the lever which is seen in a downwardly inclined position in Fig. 1.

As this machine is designed for cutting spur gears only it is not necessary that the hob spindle be arranged to swivel through a large angle, and the cutter head carrying the hob spindle therefore is a heavy one-piece design. The small amount of angular adjustment required to accommodate hobs of such thread angles as are

used for this class of production is obtained in a different manner.

The worm and gear are lubricated by a continuous flow of oil from a pump provided for that purpose. After passing over these gears the lubricating oil is returned to a reservoir. There are two pumps and two circulating systems, one for lubricating oil and one for the coolant.

Fig. 5 is a diagrammatic view of the drive connections. From the horizontal pulley shaft, power is transmitted to the vertical shaft through a pair of miter gears. The drive from this vertical shaft to the hob spindle has already been explained.

From the upper end of the vertical shaft power is taken off through a pair of right angle worm gears to drive a horizontal shaft which is splined to carry a spur gear meshing with a large spur index gear on the work spindle. Both of these spur gears are carried by the work slide. Their relative positions are outlined by the gear cover which is seen on the rear end of the work slide in Fig. 3.

Simple Train Between Work and Hob

There are only three pairs of gears between the hob and the work. All other gears are for auxiliary purposes and have nothing to do with maintenance of the correct velocity relation between the hob and the work.

In the end view of the machine, Fig. 3, may be seen a pair of spur gears from which the cover has been removed. These are the change gears controlling the feed. They are mounted on fixed centers so that both must be changed when it is required to vary the feed. This machine has no change gear train in the ordinary sense, but there are two pairs of gears to be changed in making a new setup, namely, the feed gears just mentioned and the right angle worm gears at the top of the vertical drive shaft.

The right angle gears are changed whenever it is required to cut a different number of teeth or to change the number of threads in the hob. They control the ratio between hob rotation and work rotation. A cover on top of the housing for this gear (above the flywheel in Fig. 2) is removed to allow for changing the worm on the vertical shaft. Another cover of circular form (seen

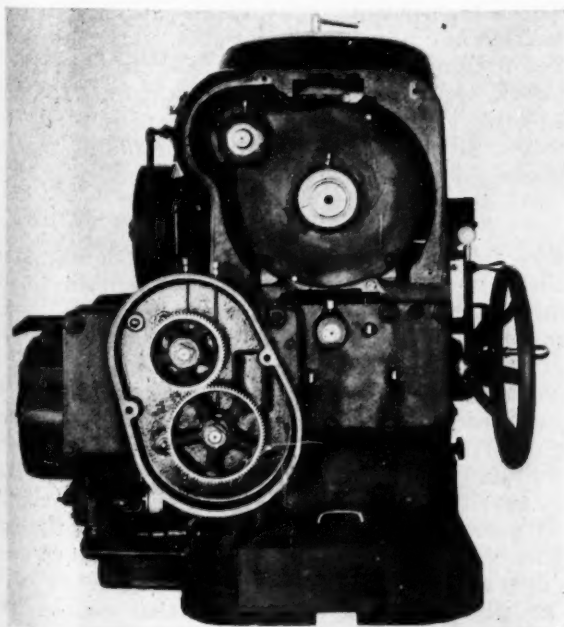


Fig. 3—End view of gear generator with housings removed

directly above the flywheel in Fig. 2, just back of the flexible metal hose carrying lubricating oil to hob spindle gears) is removed to change the driven worm gear on the horizontal shaft which carries power to the pair of spur index gears.

Both gears of this pair are marked with the same number and a chart is supplied showing by number which pair is required to cut any given number of teeth with a hob having a given number of threads.

It has been found advisable to provide for easy changes of setup to different numbers of teeth, different feeds and different hobs, in order to allow each machine in a plant to be operated at a suitable speed and with a hob of suitable diameter for the job without nullifying the standardization of machines in the plant.

When a change of design calls for a different number of teeth, or when deliveries on hobs necessitate going to a different diameter, the machine can be readily adapted to these conditions. It is often advisable to use a single, double or triple thread hob on various gears in the same transmission. Occasions are almost sure to arise for changing feeds or shifting hobs or jobs from one machine to another in order to keep production balanced.

Such changes are made in a few minutes by means of these gears and the adjustable hob angle. Only one pair of rotation gears and one pair of feed gears are furnished, additional gears being sold as extras.

On some of the first of these new machines put in operation the cutting time often was less than the time required for changing work, and this situation inspired further improvements to facilitate changing the work and to reduce idle time. In addition to the power quick-return, there is a power quick-approach for starting the cut.

Where the machine can be used with a pull feed the idle time can be reduced by reversing the direction of feed so that the operator, after putting on the new blanks, only needs to pull the starting lever. The cut then starts immediately without even the quick-approach movement.

It is claimed for the machine that as a result of the unusually rigid housing it is possible to cut more gears per sharpening and to get more sharpenings in the life of a hob. Work and hob are said to be held together so firmly that the hob teeth take a clean bite into the metal instead of skating over the surface before digging in.

Oil Test Tank Determines Bearing Clearances

SATISFACTORY operation of pressure systems of engine lubrication depends on the maintenance of proper bearing clearances. If the clearances are too small, not only will the bearings be insufficiently lubricated but also the cylinder walls, piston pins and other parts oiled by throw-off from the bearings, will not receive enough lubricant. On the other hand, if the clearances are too large, the throw-off from the bearings will be excessive with resultant over-oiling.

To enable its dealer service stations to maintain proper clearances in engine bearing work, the Packard Motor Car Co. is distributing an oil test tank which is a duplicate of the device used at the factory for testing bearing adjustment on new engines. With this tank it is a comparatively simple matter to turn out bearing work with proper clearances.

The tank is useful for diagnosing over-oiling trouble and also for checking clearances on bearing refitting jobs. In the former case, the value of the tank lies in the fact that it enables the mechanic to determine whether the over-oiling is caused by the bearings or by the pistons and rings.

In testing refitting work, the main and connecting rod bearings caps are set up to provide a minimum clearance of 0.001 in., and the cotter pins put in place. If this work is done properly, the crankshaft should turn over freely with the hand crank. The test tank is then used to see that the fit of each bearing is correct.

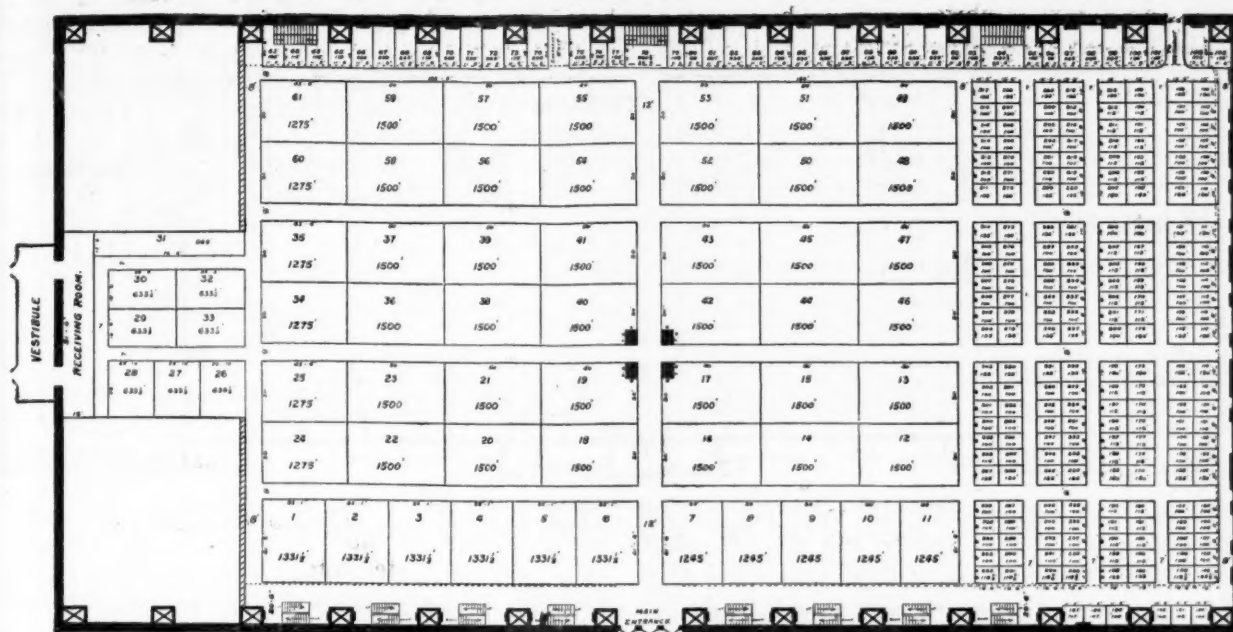
The first step in the use of the tank, assuming that the oil pan has been dropped, is to disconnect the oil manifold from the oil pump. The test tank is then filled about two-thirds full of oil and its hose connected to the oil manifold. Air is then pumped into the tank, through the tire valve provided for the purpose, until a minimum pressure of 30 lb. is shown by the gage. The oil gage on the instrument board should also register this pressure except when cylinder 1 and 6 are on upper

dead center, as in this position there is a direct flow of oil through the camshaft to lubricate the front end drive.

The next step is to turn the engine over by hand. The flow of oil from the main and connecting rod bearings will be in drops before reaching the floor and should be at the rate of from 20 to 60 drops per minute. If the flow from any bearing is less than the lower limit, its clearance is too small and, if the flow is more than the upper limit, the clearance is too big.

Where the mechanic is using the test tank to diagnose over-oiling trouble, if the bearings are at fault, the defect will be readily apparent and he can tighten up on the ones that are causing the trouble, until the flow of oil comes within the prescribed limits. In checking refitting work, the hand crank is a test against too small and the tank against too large clearances. The tank also assists the mechanic in holding the fits of the individual bearings more nearly uniform.

AT a recent meeting of the Gage Steel Committee considerable difference of opinion was shown to exist as to the relative durability of gages which are file-hard and those which are not. Two representatives of the Ford Motor Co. testified that file-hard gages gave the maximum of service and that at the Ford plant only file-hard gages were accepted for use under severe conditions. On the other hand, Major Johnson of the Ordnance Department and C. E. Watterson of the Sheffield Machine & Tool Co. gave their opinion, also based on experience, that gages of a composition which does not acquire file-hardness show higher resistance to wear than file-hard gages. Major Johnson said he referred particularly to thread gages, and the conclusion was reached that the conditions of wear of thread gages might not be the same as those for ordinary gages.



Space adjoining the receiving room at the Bronx Armory which was used for parts and accessory exhibits last year will be given over to taxicabs at the coming show

Silver Jubilee Automobile Shows Will Have More Space and Better Arrangement

In New York all parts and accessories will be exhibited with the cars on the main floor of the Bronx Armory, while in Chicago the Coliseum will house the entire show for the first time in years.

SWIFT progress is being made by two of the big national associations of the industry toward making the 1925 National Automobile Shows—the silver jubilee shows—the greatest expositions in the history of the industry.

The National Automobile Chamber of Commerce and the motor and accessory manufacturers, which cooperate in staging these shows, are working together to make the exhibitions representative of all divisions of the industry and to bring about a record-breaking attendance of manufacturers, distributors, dealers, jobbers and the service elements of the trade, and the public.

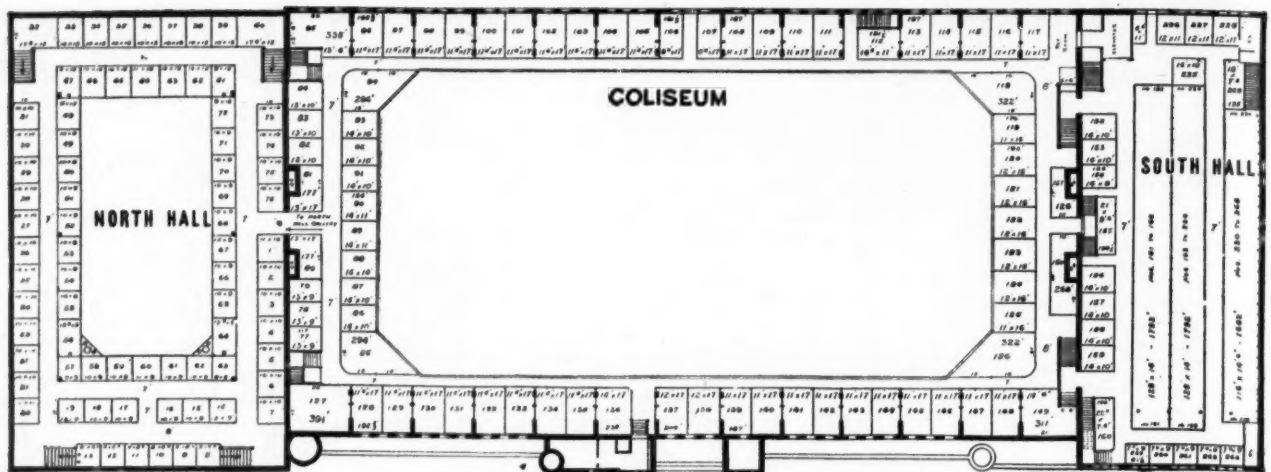
In addition to the provision for two days of exclusive trade attendance at the opening of each show, and for elaborate decorations in keeping with the silver jubilee celebration, which will contribute to the strength of the shows, there will be a physical improvement of the showing facilities at both expositions. At New York this will be brought about by a grouping of all the parts and accessory exhibits on the main floor of the Bronx Armory with the cars. At Chicago the erection of a new building and the improvement of the Coliseum will accomplish the aim of the show management to provide exhibitors with better means of getting the attention of the show crowds.

At the New York show last year considerable difficulty resulted from the location of parts and accessory exhibits at the extreme west end of the great armory drill hall, adjoining the receiving room. At the coming show this space will be utilized for taxicabs, which will be put

in position after all the car, parts and accessory exhibits are moved in. Under the rearrangement, parts and accessory exhibits will occupy the entire east end of the drill hall and will also extend along the north wall. The New York show is laid out with 61 spaces for cars and taxicabs and 256 for motors, parts, accessories, shop equipment and kindred products.

At the Chicago show, for the first time in many years, the armory, located at the end of an alley adjoining the Coliseum, will not be used. The entire show will be housed in the Coliseum, the South Hall, formerly the Annex, the Greer Building adjoining the South Hall, and the North Hall at the other end of the Coliseum. The North Hall is a new building now under construction.

The North Hall, the Coliseum, South Hall and the Greer Building will be tied together by means of connecting doors on the main floor, and the parts and accessory exhibits in the North Hall gallery, Coliseum gallery and second floor South Hall will also be connected on a single floor level. The new North Hall, like the Coliseum, will have a gallery running all the way around. This building will have a 103-ft. frontage on Wabash Avenue and will run back 167 ft., approximately the depth of the Coliseum. It will have a level roof, with no intercepting arches or other obstructions. The South Hall is being repaired and redecorated, and the Wabash Avenue side of the Coliseum gallery is also being improved, so that, all in all, the Chicago show will present a much more attractive appearance. There will be 66 spaces for cars and 263 spaces for accessories.



Parts and accessory exhibits in Chicago will be in the North Hall and Coliseum galleries and on the second floor of the South Hall, all connected on one level

The new arrangements of exhibits at New York and Chicago have prompted wide interest among manufacturers in the industry and a good deal of favorable comment on the part of members of the Motor and Accessory Manufacturers Association, who have already received space diagrams and application blanks for the 1925 shows.

While the manufacturers have been discussing the improved showing facilities there has been industry-wide talk, not only among manufacturers, but among car distributors and dealers, jobbers and service men, regarding the decision to open the shows on Friday morning instead of Saturday afternoon, and to have Friday and Saturday, until 7 o'clock Saturday evening, restricted to trade attendance. The N. A. C. A. and the M. A. M. A. will work out plans for credentials admitting responsible men in all divisions of the industry and trade, and early indications point to a large, representative attendance from the larger industrial and trade units throughout the country and from smaller units within a radius of several hundred miles of New York and Chicago. The trade days at New York will be Jan. 2 and 3, with the showing continuing until the 10th, and at Chicago, Jan. 23 and 24, with the show closing on the 31st.

Supporting the trade days arrangement, car manufacturers are already developing in a preliminary way plans to encourage attendance on the trade days of their engineering, production and purchasing executives and their dealers. One manufacturer has advanced his an-

nual dealers' dinners from Thursday of show week to Saturday evening, making them climaxes to the trade days and so encouraging his dealers to go through the shows before the public is admitted.

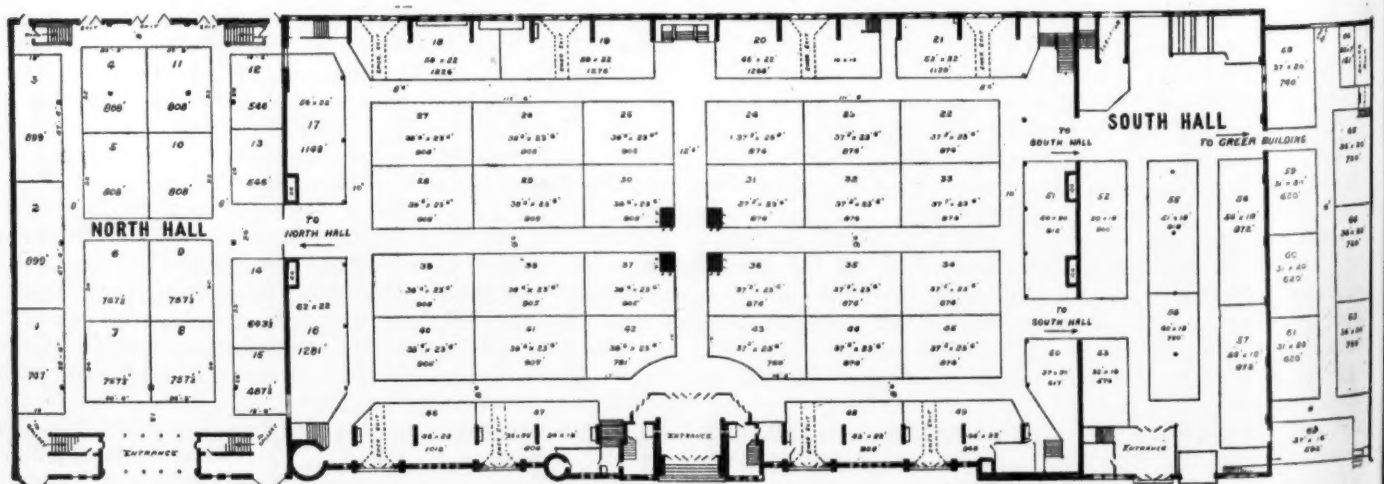
It has already been definitely decided by executives of the N. A. C. C. that the controlling heads of the motor vehicle manufacturing companies will be urged to have their key men in attendance at the shows rather than at the hotel headquarters and hotel exhibits, as in the recent past.

It is expected that detailed plans for bringing this about will be worked out at a meeting of the directors of the N. A. C. C. to be held the first week in September.

A recent questionnaire sent out to over 400 automotive equipment jobbers and motor car dealers who sell automotive equipment in their establishments, asking them their opinion as to the trade days at the shows, has brought forth an almost unanimous approval of the idea.

Automotive equipment jobbers have written that they intend to send their prominent executives to the trade days at the shows that they may see the accessory and equipment displays, and dealer executives will many of them send their service managers and accessory men to see the exhibits and place orders for future delivery.

With four months to elapse before the national show season opens, indications are already apparent that the industry may expect much more in the way of advertising and selling results from the 1925 shows than has been the case in recent years.



Erection of a new building and improvements in the older part of the Coliseum provides exhibitors with better means of getting attention of the show crowds

400 Horsepower Racer Built to Beat World's Mile Speed Record

Experiments being made with individual carbureter and supercharger for each cylinder. Rear tread reduced to 37 in. to do away with differential. Delco ignition used.

By W. F. Bradley

WITH the object of capturing the world's short-distance speed record of 156.4 m.p.h., established by Milton in a sixteen-cylinder Duesenberg on Daytona beach, a special racing car has been built in France to the order of Mr. Djelaleddin, an Egyptian sportsman, and will be sent to America this fall. This attempt to wrest speed records from America is a private venture, entirely independent of any automobile manufacturer, and has been undertaken by Mr. Djelaleddin for the pure love of racing.

The 400 hp. speed creation was designed by M. Moglia, an Italian engineer, who, after being connected with various Italian automobile factories was attached to the experimental departments of the Ballot and Talbot-Darracq companies in France. The car, which has been designated "Djelmo" by its owner, is fitted with a straight eight 4.2 by 5.5-in. engine (610 cu. in.) which developed 355 hp. in its first official bench trials.

This is one of the first, and probably the first, modern European car to be built from the ground up with a view to speed records, all previous attempts in this line having been made with aviation engines in old or makeshift chassis. The cylinders are in two castings of four, with the water jackets cut away and replaced by aluminum for lightness and mounted very close together on an aluminum base chamber.

Four valves per cylinder are inclined in the head and are operated by two overhead camshafts driven by a train of spur pinions contained in an aluminum housing at the front. The crankshaft is mounted in nine plain bearings. Aluminum pistons are fitted. Ignition is Delco, with two distributors, one on each of the camshafts, supplying current to a single plug in the center of each combustion chamber. In the bench tests four

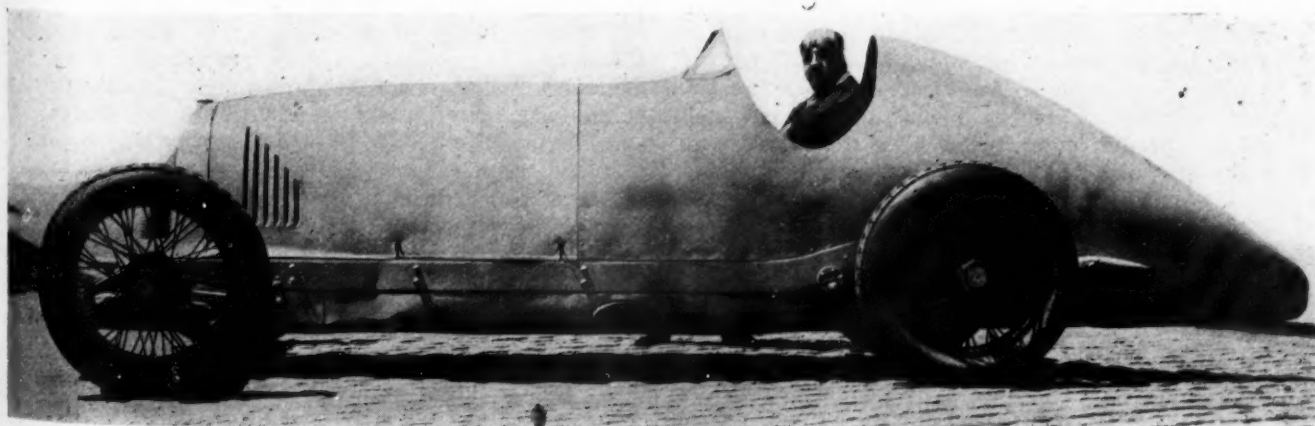
carbureters were used, but experiments are now being made with an individual carbureter for each cylinder, each carbureter having its own supercharger, the blowers being driven from the rear.

Clutch housing and gearbox form a unit bolted to the rear face of the engine base chamber, the powerplant being mounted directly in the chassis, with six-point attachment. A multiple disk clutch with Ferodo facing is made use of, while the gearbox provides a direct, an indirect with a ratio of 1 to 2, and a reverse. The housing for the worm and wheel steering gear is bolted to the top of the base chamber immediately behind No. 8 cylinder; the clutch pedal is to the left and the brake pedal to the right of the gearbox.

With the standard 56-in. tread in front, the rear tread is reduced to 37, thus enabling a certain amount of weight to be saved and making a differential unnecessary.

The car is a fine example of scientific streamlining. An aluminum casing incloses the radiator, the forward portion of the frame members and the front springs, leaving the two extremities of the front axle projecting, and these are profiled. The body is a single seater, with a wind scoop in front of the pilot and the rear profiled to his head and shoulders. In order to maintain the continuity of the lines, there is no external exhaust pipe, the eight exhausts being collected under the hood and discharging through a mouth in the underpan.

Having been built in France, the car will race under French colors—radiator housing white, extremities of front axle red, and body blue. After a few preliminary trials on the road in its country of origin the racing machine will be sent to America to make an attempt on world's records either at Dry Lake or at Daytona.



Mr. Djelaleddin in his four hundred horsepower speed creation which he had made to contest Tommy Milton's short distance speed record made at Daytona, Fla.

Here and There in Foreign Markets

By special arrangement with the Automotive Division, Bureau of Foreign and Domestic Commerce

Tractor Market Growing in Egypt

A GROWING market for tractors exists in Egypt, according to a report just made to the Department of Commerce. Official Egyptian statistics show that 101 tractors were imported in the first four months of the current year compared with but 15 imported in the corresponding period of 1920, valued at 12,726 and 1782 Egyptian pounds, respectively. In 1920, 294 tractors were imported and this figure will be exceeded in 1924 should the present rate of import continue.

Some agents for well-known makes of American tractors are systematically and scientifically pushing sales throughout Egypt. One agent delivers tractors to farmers on a part payment plan and each sale is carefully followed up to insure the purchaser obtaining the maximum amount of service. This is a very important factor in Egypt, and the maintenance of stocks of tractors and spare parts in such centers as Cairo and Alexandria has been an important element in enabling many tractor sales to be made.

Most of the tractors imported are for agricultural uses, but Egypt is now launching upon a program of road development which should create a market for tractors for road development. A large program of public works construction which was postponed during the war and which has not yet been renewed will in time be carried to completion and tractors will be suitable for performing much of the work that will be undertaken.

Use of Cars Increases in Italy

RAPID growth in the use of motor vehicles in Italy is shown in figures of the Ministry of Finance. Passenger cars in use on June 1, 1924, totaled 61,251, as against 11,243 on the same date in 1911; trucks advanced from 392 to 28,212 in the same period; increase in the use of motorcycles is seen in the comparative figures of 7513 in 1911 and 38,262 in 1924; in bicycles, from 930,651 in 1911 to 2,264,105 in 1924; and motor boats, from 104 in 1915, date of first available figures, to 1557 in 1924.

These figures appear very small when compared with those for the United States the total number of passenger cars being only about 1/5 of the monthly production of American factories and the total number of trucks being also below such monthly production. However, a steady increase is shown, which in the case of passenger cars was most pronounced during 1923. For the first five months of 1924, which is as far as the figures are available, there was an increase of 4554 or at the rate of about 11,000 for the year. The decrease shown in 1914-15 figures can only be explained by the fact that, owing to the financial crisis resulting from the outbreak of the war, many owners laid up their cars.

Before the war very few motor trucks were used in Italy, the number recorded in 1914-15 being limited to 1148. Under the pressure of war necessities, however, a very rapid increase took place and in 1921 a total of 22,422 had been reached. Since that time the number has been gradually growing, but at a moderate rate. The cost of gasoline in Italy is high, while the element of time has not yet come to be of special importance, and with the exception of the many motor omnibus routes carrying passengers and mails motor transport is by no means common.

Plan German Transportation Exposition

DEFINITE plans are being made by the German Government for the first German Transportation Exposition to be held in Munich sometime in 1925. Details are now being worked out by State Secretary von Frank of the German Military Ways and Means Committee.

All forms of transportation are to be included in the exposition, including, air, land, water, post, telegraph and radio. Organizations in these various fields of transportation are cooperating with the Federal, State and Municipal governments in working for the success of the exposition, the department is advised.

One of the major phases of the exposition will be that of public roads, which will depict the design and construction of public highways, materials, machines and tools; automotive equipment, tractors, and road building machinery of various types. Air transportation displays will feature various makes of air crafts, balloons, equipment, repair and safety devices.

American manufacturers of automotive equipment and road equipment manufacturers are invited to participate in the exposition. Communications, for details, should be addressed to Die Geschaeftsstelle der Deutschen Verkehrsausstellung, Ausstellungspark, Theresienhoehe 4-a, Muenchen, (Munich), Germany.

Guatemala Reduces Import Duties

A REDUCTION of 20 per cent in the import duty of automobiles, trucks, motorcycles, tires and tubes, will be effective immediately as a result of the trade treaty just signed by the United States and Guatemala.

Under the pact each nation agrees to accord to the other "unconditional most-favored-nation treatment with respect to customs duties and other changes affecting commerce." An interpretation of this clause places the duty on automobiles on the same basis as France, which in effect is a 20 per cent reduction from the present tariff of 0.20 pesos per kilo (1 kilo being eqv. to 2.2046 lb.). The new tariff becomes effective Sept. 16.

Five New Body Designs Are Featured in Velie's Line for 1925

Four-wheel brakes and balloon tires are now offered as standard equipment, radiator has been changed to approve appearance and multi-leaf chassis springs have been adopted to lessen rebound.

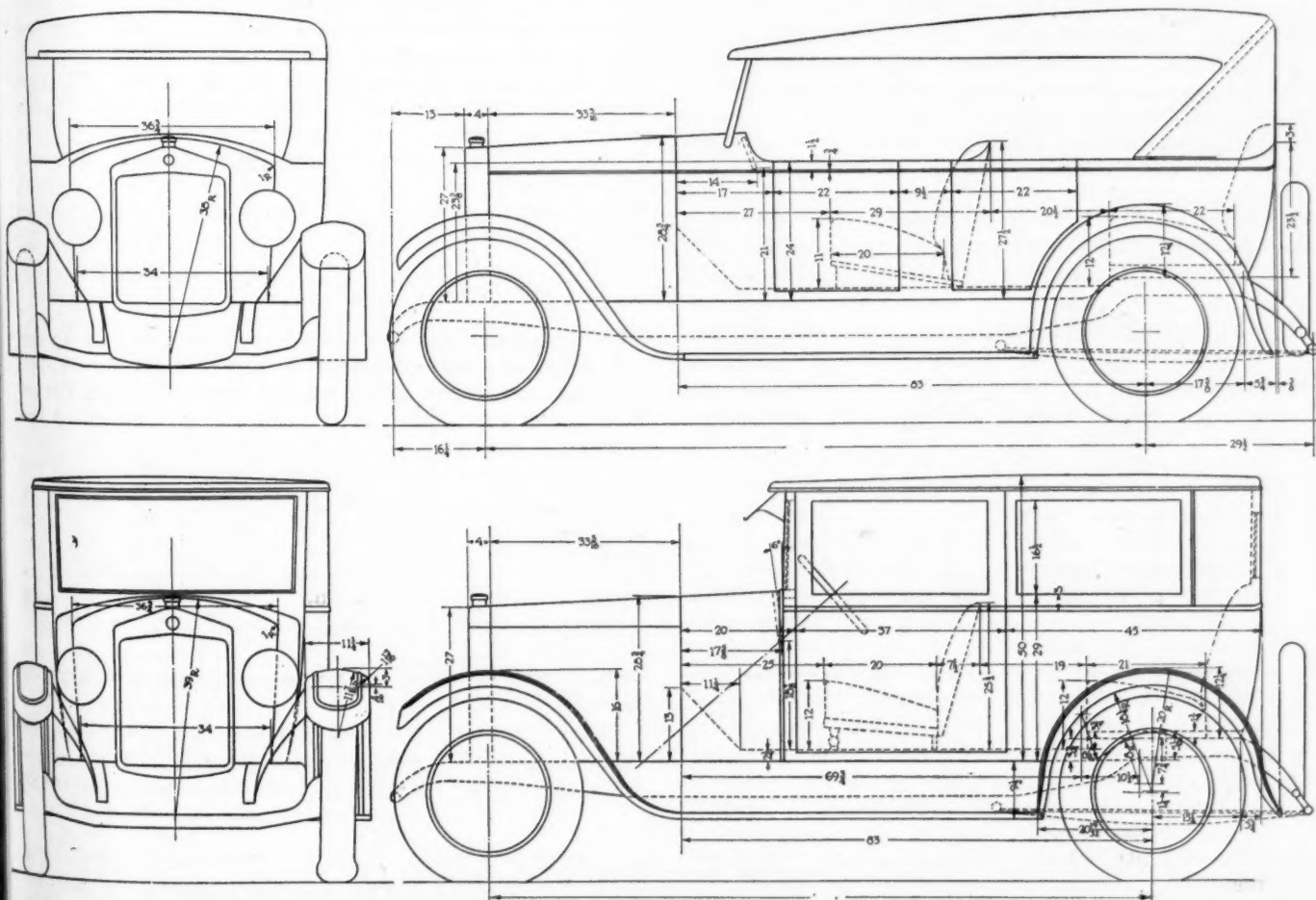
By Donald Blanchard

ENTIRELY new and distinctive body styles are the feature of the Velie line for 1925, which consists of five body models, including a five-passenger coach sedan at \$1,425. All bodies are mounted on the standard 116 15/16 wheelbase, model 60 chassis, which does not differ materially from its predecessor, the Model 58, except that balloon tires and hydraulically operated four-wheel brakes are regular equipment, whereas formerly they were optional at additional cost. Prices on the new models, all of which seat five passengers, are

Phaeton	\$1,225
Club phaeton.....	1,425
Coach sedan.....	1,425
Sedan	1,675
Royal sedan.....	1,925

The front appearance has been improved by a change in the design of the radiator. The shell, which is finished in nickel, is 1 in. higher and the shoulder lines have been raised to permit better stream lining of the bodies. In addition, four vertical bars have been set into the face of the radiator core, thus dividing it into five panels. At the juncture between hood and cowl there is an aluminum bead molding. All models also have a belt line bead molding, which on the open models extends forward to the radiator shell.

The phaeton, coach sedan and sedan are all finished with three coats of black, baked enamel with attractive striping. The coach sedan is a two-door design and the width of its doors in conjunction with the arrangement of the folding seats, makes it possible for passengers to



Outline drawings of the phaeton model and club sedan indicating dimensions, sizes, angles and proportions

enter or leave the rear portion of the body without disturbing the occupants of the front seats. The windows in the doors and rear quarters are of generous dimensions. Disk wheels are regular equipment on this model.

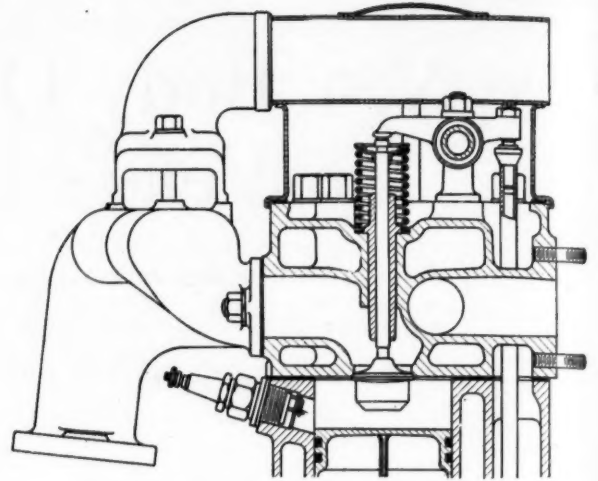
The club phaeton may be had finished either in Cairo gray or in Lotus blue with black belt molding and red striping. The same color option is offered on the royal sedan, except that Thebes gray or Hathor blue is used above the belt line. Both the club phaeton and the royal sedan are equipped with front and rear bumpers, spare tire and cover, step plates, Moto-Meter and lock bar cap, dome light, smoking set, window shades and robe rail.

The most important changes in the chassis have been made necessary by the adoption of balloon tires and four-wheel brakes as regular equipment. The front axle is a reverse Elliott type of Columbia manufacture. To facilitate steering, the knuckles are fitted with ball thrust bearings, instead of the thrust washers used formerly, and the steering arm and tie rod connections are ball and socket joints. The knuckle pin is inclined transversely and the wheels have a slight camber so that the center of tire contact is but $\frac{7}{8}$ in. distant from the point of intersection of the knuckle pin axis with the road.

To increase the spring friction, the number of leaves has been increased from six to ten in the front springs and from seven to nine in the rear. In the standard and royal sedan models, the rear springs have ten leaves. The front springs are now $2\frac{1}{2}$ in. and the rear springs $2\frac{3}{4}$ in. thick as compared with thicknesses of 2 and $2\frac{1}{4}$ in. respectively in the Model 58. The spring material is silico manganese steel instead of the chrome vanadium steel used in the previous model. A Ross cam and lever type steering gear has replaced the worm and wheel type used formerly.

On the open models, 5.25-in. balloon tires are used, while on the closed models the 6.00-in. size is fitted, both on 21-in. rims. The four-wheel brake equipment is a Lockheed installation and is the same as that used as optional equipment on the Model 58.

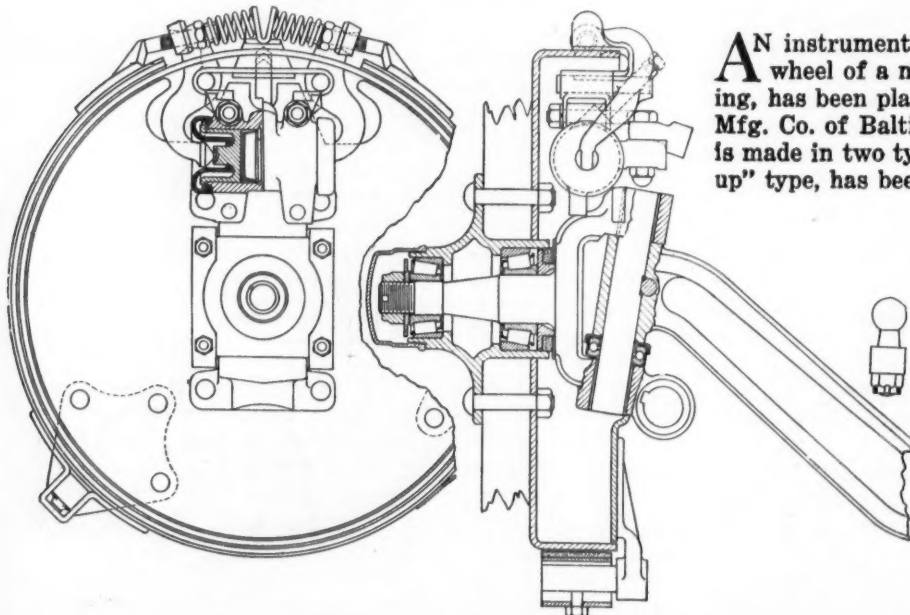
Two inches have been added to the rear of the frame and the mounting of the rear axle on the springs has been changed. The length of the rear springs has not been increased, but instead the front hanger has been moved backward. Formerly the rear axle was mounted at the center of the rear spring, but now, due to the



Section of cylinder head with new sheet steel valve cover

changed position of the springs, it is 2 in. forward of that point, so that the front portion of the spring is 4 in. shorter than the rear. This construction has been found advantageous in connection with the Hotchkiss type of drive as it increases the stiffness of the front portion of the springs, which takes the driving thrust and rear axle torque. The camber of the springs has been changed so that they are practically flat under a load of three passengers and are slightly reversed under a five-passenger load.

The engine is a six-cylinder, $3\frac{3}{16} \times 4\frac{1}{4}$ -in. overhead valve type with pressure lubrication to main, connecting rod, wrist pin, camshaft and rocker arm bearings. With the exception of minor changes, such as the use of lighter pistons and a pressed steel instead of an aluminum valve cover, it is the same as used in the Model 58. The new push type of Borg & Beck clutch in which the friction material is riveted to the driven disk, is also used. The transmission gearset is a three-speed Durston, mounted as a unit with the powerplant, and the drive is through a Thieme propeller shaft to the semi-floating, helical bevel rear axle.



Columbia front axle with hydraulic four-wheel brakes now standard on Velie cars

AN instrument for quickly determining the load on any wheel of a motor truck, and thus to prevent overloading, has been placed on the market by the Black & Decker Mfg. Co. of Baltimore. It is known as a Loadometer and is made in two types. The older one, known as the "Jack-up" type, has been in use for some years and requires the load to be weighed to be raised off the ground. The new "drive on" type eliminates the necessity for any physical exertion beyond placing the instrument in the road in line with the wheels to be weighed. Weighing only 40 lb., the loadometer can be readily transported from place to place.

These instruments are designed primarily for the use of State, county and city officials in weighing trucks suspected of being overloaded.

The Latvian Government has decided to introduce the metric system as from Jan. 1, 1924.

Export Parts Sales Likely to Break Record in Next Six Months

Car and truck shipments probably will hold up well. Complete figures for first half year show a gain over 1923. World economic conditions are on the mend.

By George E. Quisenberry

Editor, The American Automobile (Overseas Edition)

STUDY of American export figures for the first half of 1924, together with a survey of business conditions throughout the world, constitute a basis on which may be hazarded the following predictions concerning automotive foreign trade in the near future:

1. Truck and bus shipments, particularly the latter, will hold up or gain during the forthcoming months.

2. Car shipments for the rest of 1924 will be comparable to those of the same period of last year. It is not likely that they will be larger, but it is not likely that they will be much smaller. Car and truck shipments for the entire year will be higher than in 1923.

3. Parts, equipment and allied products will continue at remarkably high levels. The thousands and hundreds of thousands of new cars and trucks put into service last year have enlarged materially the demand for such products. Exports of these lines will be the largest in the history of the industry.

One American automobile was sold abroad for every nine put into service in the domestic territory during the first six months of this year. The percentage of exported cars and trucks to total production was almost exactly 9.5. This includes, of course, shipments abroad from the United States and Canada and the assembly of American cars and trucks in other countries. The total value of this trade, so far as the major items are concerned and based upon customs valuation at the ports of embarkation, was \$138,543,059. The car and truck units totaled 191,524—much the largest ever achieved by the industry in a six months' period and exceeding the first half of 1923 by 22,170.

These figures are compiled from the combined shipping returns from both the United States and Canada, the statistics of which are published in the adjoining tables. Details of the shipments are as follows:

FROM THE UNITED STATES (Six Months, 1924)		
Passenger Cars	Number	Value
Up to \$500	30,980	\$11,210,243
\$500-\$800	24,067	16,034,766
\$800-\$2000	23,495	25,333,685
Over \$2000	1,751	4,887,706
Total	80,293	\$57,466,400
Motor Trucks		
Up to 1 ton	11,250	\$4,560,521
1-2½ tons	2,602	3,492,127
Over 2½ tons	719	1,782,910
Total	14,571	\$9,835,558

Parts		\$44,236,937
Tires		
Casings	609,106	\$7,382,889
Inner	559,180	1,037,301
Solids	56,106	1,037,301
Total	1,224,392	\$9,922,291

FROM CANADA (Six Months, 1924)		
	Number	Value
Passenger cars	23,931	\$11,837,103
Trucks	7,238	2,461,656
Parts		2,783,114

CAR AND TRUCK ASSEMBLIES ABROAD (Automotive Division Figures)	
Six months, 1924	65,491

GRAND TOTALS	
Cars and trucks (number)	191,524
Cars, trucks, tires, parts (value)	\$138,543,059

Comparisons between the six months periods of 1923 and 1924 show as follows:

	1923	1924
From United States		
Cars	64,948	80,293
Trucks	11,578	14,571
From Canada		
Cars	23,931	23,931
Trucks	4,202	7,238
Assemblies abroad	25,364	65,491
Totals	168,354	191,524

Impressive Gains Made

Gains of an impressive character are shown in every category except that of passenger car shipments from the Canadian plants. The falling off there is due to a shift of shipments to some of the United States factories, a reduction of exports to Great Britain because of the impending tariff change and, finally, to the opening by Ford of a new assembly plant in South Africa. Formerly, Ford shipped complete cars to South Africa from the Canadian plant, which controls sales to most of the British Dominions, and these were shown in the customs declarations. Now, however, the Canadian plant is shipping parts to South Africa, which, of course, are not represented in the car totals. The South African plant, opened in February, is, incidentally, the first foreign assembly branch of the Canadian Ford company. The parent Ford company, it should be said in this connection, has further extended its assembly activities abroad this year, with new plants at Stockholm, Sweden, and Santiago, Chile. These, however, did not particularly

Exports of Cars, Trucks and Tires for Six Months

COUNTRIES	GASOLINE PASSENGER CARS								TRUCKS					
	Up to \$500		\$500 to \$800		\$800 to \$2,000		Over \$2,000		Up to 1 ton		1 to 2½ tons		Over 2½ tons	
	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value
Europe														
Austria	13	\$5,831	12	\$8,836	39	\$41,815	9	\$23,740						
Azores and Madeira Islands	34	10,291	14	7,764	4	5,391			1	\$408				
Belgium	221	90,008	271	193,518	369	409,136	90	263,756	2	1,455	1	\$1,383		
Bulgaria	2	780	1	770	4	5,191	1	2,313						
Czechoslovakia	15	6,925	5	3,813	16	16,445								
Denmark	96	36,824	191	134,641	226	241,787	19	66,709			7	9,805		
Estonia			4	3,339	1	832								
Finland	110	44,211	135	88,644	94	99,227	3	9,313	37	17,723	3	4,925		
France	41	15,699	14	10,725	33	39,841	24	65,399	3	1,224				
Germany	196	82,396	191	135,616	1,064	1,135,288	67	182,389	7	5,941	21	25,406	1	\$15,900
Gibraltar														
Greece	59	26,086	84	62,547	54	59,685	7	20,099	2	1,607	1	1,034		
Hungary	1	490			33	38,721	3	8,191						
Iceland and Faroe Islands					1	1,042								
Italy	1,145	320,789	19	10,987	11	12,623	17	66,748	1,014	261,524				
Latvia			3	2,182	17	18,274	1	2,447						
Lithuania					1	1,932								
Malta, Gozo and Cyprus	35	12,708	10	6,851	10	11,063	4	13,600	1	505				
Netherlands	207	89,394	342	235,489	690	773,110	85	242,365	20	17,071	23	24,469		
Norway	152	62,044	127	84,376	123	126,508	4	11,914	6	3,930	7	8,817	2	3,500
Poland and Danzig	1	521	11	7,459	48	52,644	1	4,000						
Portugal	38	13,762	24	17,109	66	78,100	4	9,231			1	500		
Rumania	85	31,754	31	21,115	48	57,017	11	25,979						
Russia									75	28,676				
Spain	1,188	440,128	659	461,485	834	919,101	105	289,030	363	113,563	41	44,224		
Sweden	340	117,495	689	474,914	45	1,004,921	45	119,836	1,309	423,517	31	34,158		
Switzerland	56	23,630	120	80,069	366	448,297	33	82,203	9	4,373				
Turkey	14	5,225			13	14,794								
Ukraine	1	450												
England	684	298,467	1,303	812,713	597	624,697	95	280,537	113	87,259	222	223,871		
Scotland	3	1,395	34	19,771	19	20,550	2	6,473	6	3,970	3	4,337		
Ireland	6	1,225	110	76,325	23	26,937	1	3,300						
Yugoslavia, Albania and Fiume	10	4,210	3	2,185	9	9,320	1	2,313						
North and South America														
United States														
Canada	607	172,364	1,744	1,157,087	2,460	2,744,511	205	595,435	229	183,550	587	825,671	77	232,404
British Honduras	4	1,163	3	1,927							1	6,399		
Costa Rica	51	23,480	11	7,530	24	23,561			1	505	3	4,214		
Guatemala	2	704	45	32,401	89	102,128			8	4,071	1	1,167		
Honduras	24	7,401	7	4,677	7	6,566			17	6,358	1	907		
Nicaragua	10	3,683	21	15,420	13	15,068	1	2,495	1	452				
Panama	64	25,419	39	27,394	67	81,779	2	9,860	56	22,619	26	34,481	2	5,150
Salvador	19	8,540	26	18,583	70	83,081	2	10,825					5	24,223
Mexico	2,413	765,602	596	412,087	523	571,219	56	178,739	451	182,389	128	143,045	12	42,404
Miquelon, Langley and St. Pierre	2	500												
Newfoundland and Labrador	31	12,092	10	6,847	25	28,632	1	2,313	2	300	2	1,936		
Barbados	31	11,712	4	2,852	12	12,823			25	9,238	1	1,812		
Jamaica	69	25,952	94	66,424	65	65,431	1	5,500	59	26,716	16	17,694	3	8,605
Trinidad and Tobago	70	27,571	23	16,207	7	6,211	1	3,224	33	15,318	2	2,742		
Other British West Indies	35	12,516	11	7,099	5	5,940	1	4,500	13	5,567	1	1,540		
Cuba	2,841	855,739	472	317,165	333	387,957	115	334,496	684	169,082	30	35,201	9	29,275
Dominican Republic	244	84,498	45	31,612	63	75,523	16	41,905	48	23,340	7	12,333	8	23,164
Dutch West Indies	39	12,119	9	5,476	8	10,110			22	8,084				
French West Indies	2	764							3	814				
Haiti	44	17,026	49	35,104	32	33,665	1	2,400	13	5,479	6	7,769		
Virgin Islands	16	3,712	1	746	3	2,858								
Argentina	3,063	1,297,544	1,190	797,939	1,441	1,501,671	133	371,681	129	77,631	79	142,322	87	201,885
Bolivia	2	364	8	6,133	49	63,549	5	13,932	1	440				
Brazil	821	271,374	634	450,013	947	958,254	59	159,614	369	98,600	6	12,212	3	10,652
Chile	469	108,411	75	32,459	136	168,946	37	109,534	472	202,663	92	141,741	5	12,391
Colombia	110	38,571	47	32,758	112	127,452	6	16,821	83	33,785	13	30,204	3	12,243
Ecuador	48	17,362	7	4,473	23	29,349	1	2,007	50	16,626	2	2,439		
British Guiana	21	7,444	5	3,548	1	1,125			2	712	1	1,196	1	2,002
Dutch Guiana	2	664												
Paraguay	15	5,200							5	1,884				
Peru	354	132,092	251	181,017	219	211,221	4	12,855	372	172,094	129	151,976	6	27,466
Uruguay	1,697	522,033	381	246,877	256	297,404	22	61,523	583	157,424	3	3,737	4	11,887
Venezuela	400	155,646	126	87,068	110	110,559	27	72,545	145	58,808	35	47,602	8	38,813
Asia														
Aden					2	2,107			2	1,400				
British India	575	257,409	531	362,350	217	234,005	10	27,646	55	43,336	45	54,808	2	4,000
Ceylon	89	39,246	58	41,136	83	87,627	3	6,361	33	31,966	60	84,433		
Straits Settlements	157	71,627	68	47,701	99	102,689			2	1,005				
China	168	60,729	262	184,684	195	231,316	4	9,633	164	63,546	21	29,768		
Chosen	150	48,561	6	4,000	2	2,846			15	4,840				
Java and Madura	54	24,503	318	222,324	293	296,222			2	972	10	10,565	2	2,200
Other Dutch East Indies	5	2,347	53	35,924	25	34,833								
Hokkaido, Arabia and Mesopotamia	126	44,356	2	1,325	12	10,722					6	5,595		
Hongkong	22	8,113	10	7,474	38	48,047	2	14,348	51	26,027	5	7,575		
Japan	2,203	734,956	494	318,465	763	871,574	64	166,818	2,750	1,110,684	145	242,964	112	315,669
Kwantung	20	7,280	9	5,562	7	10,637			30	10,520	2	2,935		
Palestine and Syria	378	113,892	78	53,722	80	87,291	1	2,309	22	8,675				
Persia	54	18,574			1	805								
Philippine Islands	597	227,543	359	256,623	280	297,390	28	79,859	331	136,697	34	37,100	1	1,000
Russia					1	1,492								
Siam	5	2,371	27	18,868	3	3,701								
Turkey	10	3,040			1	1,078			10	2,960				
Oceania														
Australia	6,785	2,632,183	8,270	5,281,791	5,431	5,778,165	208	501,801	452	433,099	483	659,981	303	583,760
British Oceania	7	3,036	10	6,977	6	6,679			2	637	2	2,757		
French Oceania	13	5,041	11	7,480	2	2,835	1	2,250	4	2,240			1	1,000
New Zealand	208	92,407												

Ending June 30, 1924

Canadian Exports

ELECTRIC VEHICLES		PARTS		TIRES						PASSENGER CARS		TRUCKS		PARTS	COUNTRIES
No.	Value	Value	Casings		Inner		Solid		No.	Value	No.	Value	No.	Value	
			No.	Value	No.	Value	No.	Value							
		\$1,426	424	\$5,950	550	\$961									Europe
		1,026	159	2,093	98	151									Austria
		5,884,775	5081	80,981	3,947	7,739	6	\$383	107	\$83,709				\$20,276	Azores and Madeira Islands
		2,338	25	245	60	86			2	1,731					Belgium
		2,688	179	3,863	40	99	28	1,091	1	482					Bulgaria
		5,795,150	33,463	326,203	29,399	38,836	466	16,728	11	11,158				202,062	Czechoslovakia
		176	43	1,185											Denmark
		7,923	4,786	65,085	5,332	10,042			25	16,706					Estonia
		2,293,246	2,744	50,491	515	2,062			8	4,631					Finland
		56,877	300	5,439	268	832	58	2,138	311	287,164				2,328	France
		1,887													Germany
		36,147	1,217	19,237	1,533	2,416	420	10,977	5	3,014					Gibraltar
		767	386	5,577	475	901			18	17,009					Greece
		2,834	1,198	14,499	871	1,307									Hungary
		427,674	4,163	41,175	4,101	6,859									Iceland and Faroe Islands
		574	195	2,435	348	641	24	558						84	Italy
		183	34	443					1						Latvia
		5,462	112	983	154	255			12	819					Lithuania
		434,839	7,187	95,503	5,520	14,336	260	8,377	93	83,899				64	Malta, Gozo and Cyprus
		81,033	8,227	120,821	8,286	14,904	429	16,985	31	30,449				820	Netherlands
		41,869	180	2,614	234	450			69	64,310				209	Norway
		30,220	2,507	30,442	7,121	14,044	8	633	2	913				24	Poland and Danzig
1	\$250	20,190	4	33	94	292	34	784							Portugal
		14,490	559	5,002	101	259									Romania
2	1,340	1,135,182	4,620	91,336	4,188	11,650	1,450	46,716	4	3,004				80,094	Russia
2	3,470	263,940	24,170	334,017	19,794	37,565	352	15,033	256	247,095				240	Spain
		23,267	2,289	45,731	1,515	4,056	8	217	74	65,218					Sweden
		11,688							47	26,999					Switzerland
		1,958	132	2,717	16	30								347	Turkey
1	2,506	2,498,131	85,540	955,302	58,952	92,136	18,587	477,842	3,355	2,087,463	944	\$302,175	412,298		Ukraine
		9,509	516	4,931	619	786	1,475	40,127							England
		345,310	986	7,766	903	1,099	50	1,313						14,721	Scotland
		1,961	202	12,667	224	402	4	120							Ireland
									54	31,379	2	250	58,704		Yugoslavia, Albania and Fiume
22	34,267	11,721,789	30,898	341,219	14,416	46,421	1,832	71,196							North and South America
		2,474	94	1,003	129	213									United States
		13,804	542	9,890	511	1,137	46	1,423	9	9,528					Canada
		16,219	898	14,486	1,046	2,207	5	117	13	14,546				85	British Honduras
		14,102	491	8,840	647	1,345	123	5,617						30	Costa Rica
		7,635	360	4,716	819	1,402	6	150							Guatemala
9	11,142	79,429	5,864	76,545	6,118	11,561	339	6,946	1	1,271					Nicaragua
		16,513	948	19,005	1,235	3,191	23	827	38	28,982					Panama
22	13,284	496,787	45,804	493,668	47,051	85,439	1,573	35,358	58	52,642				3	Salvador
											2	1,500			Mexico
2	4,780	12,779	985	13,150	1,151	2,042	16	560	57	26,660				2,100	Miquelon, Langley and St. Pierre
		14,010	215	2,138	250	369	20	570	21	12,865					Newfoundland and Labrador
		56,918	1,844	23,330	471	3,632	245	5,378	19	13,344				158	Barbados
		34,479	1,211	15,046	791	1,494	60	1,591	4	3,741				295	Jamaica
		14,965	564	6,679	784	1,245	56	1,937	10	6,232				601	Trinidad and Tobago
1	3,340	645,326	40,038	480,038	68,927	117,544	2,894	86,097	12	14,546				143	Other British West Indies
		58,935	6,168	61,064	6,499	10,963	382	12,549	7	4,683	3	6,800	28		Cuba
		7,295	1,091	11,625	1,372	2,416	2	29	4	2,291				108	Dominican Republic
		6,744	219	2,339	2	18		145							Dutch West Indies
		28,570	980	16,521	1,477	2,827			2	1,458					French West Indies
		5,698	309	2,942	492	847	6	106						31	Haiti
1	640	3,286,517	39,606	518,454	40,626	78,008	988	36,751	654	519,649					Virgin Islands
		11,209	206	3,382	302	747	16	554	12	13,486				167,523	Argentina
		3,165,783	20,163	190,462	25,614	36,173	604	13,720	107	112,601				139,497	Bolivia
		150,581	5,194	88,117	5,044	10,423	197	7,419	25	27,165				58	Brazil
		119,002	3,718	55,245	5,312	10,481	215	9,707	27	31,292				158	Chile
		16,519	923	14,947	983	1,936	8	354	11	13,901					Colombia
		16,508	128	1,984	79	304	48	1,044	57	33,324				59	Ecuador
		1,907	174	1,538	140	220								36	British Guiana
		4,885	252	1,953	150	185									Dutch Guiana
		173,784	12,625	184,355	11,707	24,634	257	10,344	6	2,890					Paraguay
		157,945	77,86	88,905	5,871	9,277	113	1,982	68	60,409				147	Peru
1	600	85,481	7,135	82,421	9,970	19,342	54	1,642	43	42,043				4	Uruguay
															Venezuela
															Asia
2	5,147	1,802	292	2,521	439	578			42	13,762	10	3,557	3,482		Aden
		215,818	8,446	84,217	6,224	11,432	800	25,597	2,317	994,801	632	237,707	102,328		British India
		25,610	2,124	2,908	876	1,837	211	4,871	225	105,591	177	65,233	8,207		Ceylon
		115,180	5,431	53,976	2,759	4,599	293	5,883	482	222,716	130	42,498	84,844		Straits Settlements
		72,702	3,608	39,087	1,644	3,898	100	1,512	54	34,149			90		China
		44,954	575	4,799	190	233	20	200	1	635					Chosen
		120,024	6,189	73,802	5,739	10,281	935	23,004							Java and Madura
		29,507	818	9,323	343	605	344	7,940	493	185,297	109	35,618	26,224		Other Dutch East Indies
		8,950	228	1,743	235	302									Hejaz, Arabia and Mesopotamia
		21,890	837	9,817	435	830			35	36,327				108	Hongkong
9	9,801	888,185	51,329	567,184	44,262	81,973	8,787	149,677	239	125,228	151	70,575	4		Japan
		8,971	230	2,364	227	378	8	197							Kwantung
		41,442	1,385	19,912	1,636	2,710	8	241	14	14,694				26	Palestine and Syria
		2,123	42	409	24	37									Persia
		160,867	25,615	305,829	21,801	41,072	2,941	67,830							Philippine Islands
															Russia
		4,231	236	2,572	216	526	60	974	87	26,710	88	29,118	9,041		Siam
		2,074	68	677	72	121									Turkey
															Oceania
		1,479,059	30,251	434,548	22,053	49,874	4,535	138,441	7,433	2,343,782	3,907	1,295,619	411,650		Australia
		4,492	63	1,358	54	93	14	394							British Oceania
		5,738	172	2,024	138	293	27	1,028							French Oceania
		406,076	22,073	309,156	15,057	33,254	2,209	90,181	4,437	2,356,354	768	263,554	119,691		New Zealand
		2,842	188	2,211	245	411			2	668			6,075		Other Oceania
															Africa
		4,516			943	2,448	2	52	134	36,986	84	28,516	22,863		Belgian Congo
		69,733	727	12,223											British West Africa
		440,176	13,877	184,739	13,499	28,178	312	12,300	1,686	996,859	74	23,590	859,771		British South Africa
		41,617	2,519	26,420	2,548	3,530	46	1,570	298	112,816	132	46,815	22,736		British East Africa
		25,201	1,181	14,453	687	1,195	249	6,088	1	1,271					Canary Islands
		34,408	937	8,509	523	647	282	6,852	32	17,611					Egypt
		5,807	100	1,427											Algeria and Tunis
		12,310	14	126	8	12			3	1,541	2	652			Other French Africa
		12,310	78	4,601	78	547	52	1,356	3	1,552					Morocco
		13,782	176	3,487	264	891	4	97	45	22,034				3	Portuguese East Africa
		15,478	210	3,311	459	955	76	1,633							Other Portuguese Africa
		12,41													

affect the six months' export figures, as Sweden was formerly served from Copenhagen and the Santiago plant did not begin active operations until the second quarter. It is reported to have reached from 200 to 250 vehicles monthly.

Detailed study of the shipments will in themselves reveal little change in the general direction of our export trade. The totals are considerably higher for a good many countries, but, generally speaking, the business is coming from practically the same territories as in 1923. Australia, still the leader, took much larger shipments, both from the United States and Canada, and Argentina forged well to the front as a buyer of complete cars. Assembly of Fords in the Buenos Aires plant likewise was enlarged, and from every indication Argentina will continue among the heaviest purchasers.

The reduction in shipments to Great Britain during the second quarter was the natural result of the budget announcement that the tariff would be eliminated on imported cars on Aug. 1. The anticipated lower prices, when the duty actually came off, demoralized the retail trade. Distributors and traders quickly revised their shipping schedules. The export section of the industry, of course, expects that Great Britain will become a larger buyer of American and Canadian made vehicles, but to estimate this potential trade accurately is difficult.

European Trade in American Cars

The six months' figures reveal also an increasing importance of the general European trade in American motor cars. The Scandinavian countries, Great Britain, Spain and some other sections have been for many years important users of American cars. Now, however, with increasing stability and with the slow but certain return to more normal conditions, a much wider section of the Continent is interesting itself in the American lines.

The chief value in summing up the six months' trade is in the indications it gives of what is before us. Looking backward, it is to be seen that dealers and distributors abroad became more cautious in the second quarter, reacting to the less favorable developments

here at home, reducing shipments and taking steps to insure that stocks of unsold vehicles would not be allowed to pile up. Exports as a whole decreased to some extent, although not to anything like the extent of domestic shipments. This was apparent in June and to some extent in July, but in August a more satisfactory turn was shown. The new models began going out, exchange took a turn for the better in numerous countries, particularly sterling and francs, and the London accord sent out an impulse of better business to all parts of the world.

Future Looks Favorable

As this is written, the most favorable statements can be made as to our future business. The increased prices for wheat, corn and other grain which has heartened the domestic sales managers so visibly and so quickly, is just as important to the export manager. Australia, predicting a big crop of wheat, and Argentina, with a similar outlook, will react accordingly. More solid foundations have been achieved in India, likewise an agricultural territory, and the automotive trade will profit accordingly.

Wherever we look the territories producing raw materials are seen to be in a favorable position. Even the rubber markets are believed to have passed their low points and the territories producing this staple will improve accordingly. Raw materials of every sort—grains, sugar, wool, cattle and meats, metals, etc.—are moving in larger volume and, generally, at better prices. Most of the export trade now and for the remainder of the year will come from these areas, with the industrial sections, particularly of Europe, becoming more important into 1925.

Export managers and producing factories, definitely looking ahead, must plan and prepare for 1925 to be by far the most important export year since the industry was founded. Total breakdown of the European situation is the only thing that can prevent this large business from coming about; on the face of present developments, such a breakdown appears impossible.

Automotive Shipments for June, 1924 from Canada

Countries	Cars			Parts	Trucks
	Up to \$500	\$500 to \$1000	Over \$1000	Value	Up to 1 Ton
Europe					
Belgium.....	13	1			
Denmark.....				\$2,340	
Finland.....		5			
France.....	4	2			
Germany.....			19		
Malta, Gozo and Cyprus Islands.....				54	
Netherlands.....		44	2	609	
Norway.....		3		19	
Portugal.....	2				
Sweden.....			18	24	
Switzerland.....		6	4		
Turkey.....				347	
England.....	196	17	115	23,912	324
North and South America					
United States.....	14		1	3,586	
Panama.....			1		
Salvador.....			1		
Mexico.....				3	
Miquelon, Langley, St. Pierre.....				185	2
Newfoundland and Labrador.....	15	7		366	
Barbados.....	1			84	
Jamaica.....	2			21	
Trinidad and Tobago.....				132	
Other British West Indies.....				3	
Dominican Republic.....				108	
Dutch West Indies.....		3			
Haiti.....		1			
Argentina.....			2	9,080	
Bolivia.....			3		
Brazil.....	8	2		21,293	
Colombia.....			4	67	
British Guiana					
Dutch Guiana.....		3			
Peru.....	4			\$3	
Uruguay.....	2	4			
Venezuela.....		4			
Asia					
Aden.....	10				
British India.....	369	111		20,327	99
Ceylon.....	38	3			10
Straits Settlements.....	23	22		17,511	16
China.....	8	1			
Other Dutch East Indies.....	196	2	3	6,510	31
Japan.....	15	9			
Palestine and Syria.....		1			
Siam.....	43			1,185	2
Turkey.....	2				
Oceania					
Australia.....	1,038	6	30	43,895	504
British Oceania.....				478	
New Zealand.....	453	205	89	26,616	110
Africa					
British West Africa.....	10			4,890	
British South Africa.....	141	152	12	435,228	
British East Africa.....	40	7		2,732	26
Canary Islands.....			1		
Egypt.....		6			
Portuguese East Africa.....	18		1	3	
Totals.....	2,579	627	306	\$621,728	1,124

~ Editorials ~

Stimulating Sales

NEW models undoubtedly provide a stimulus to sales, but this one method should not obscure the possibility of injecting added vigor into merchandising by other means. Most sales campaigns in the past have been hard on new model announcements. It is natural that this should be the case. But, it should be recognized that it isn't absolutely necessary to bring out a new model in order to have a special selling effort.

Oakland now is carrying on a "Sealed Order Week," which is an excellent example of what can be done to stimulate public interest and dealers' merchandising effort, without any basis other than the regular product. It takes considerable ingenuity to figure out campaigns of this kind which are not in the publicity stunt class and which have a sound marketing basis. But it can be done and more efforts of similar character might be put forward with advantage.

Get Out the Vote

GETTING out the vote for many years has been the function of political workers. Today it has become the duty of every good citizen. Automotive men have a very strong incentive to go to the polls because no industry ever has been subject to more haphazard legislation and unfair taxation. Traffic regulations, motor vehicle taxes, compulsory automobile insurance, Federal luxury taxes and a host of other questions of vital importance to automotive executives will be up for discussion in various States and municipalities. The future prosperity of the industry depends largely upon the wisdom and fairness with which these problems are met and solved.

In each national election since 1896 the proportion of voters has dwindled. In 1896, 80 per cent of those qualified to vote did vote; in 1900, 73 per cent; in 1908, 66 per cent; in 1912, 62 per cent, and in 1920, less than 50 per cent.

Nearly 3,000,000 people are directly employed in the automobile business. If they all go to the polls trying conscientiously to select the best men for the various local, State and national offices, they will perform a real service to the industry which employs them as well as to the country in which they live.

Consignment Shipments

MANY sound reasons exist for the method of financing automobile sales which has grown up with the industry, despite the fact that it differs considerably from the practice in most other fields. It has been pointed out frequently that the automobile maker is practically the only manufacturer who gets cash for his product as it leaves the factory. The fact

remains that the automobile is quite different from most other commodities in that its value can be depreciated very greatly in a few days' use, so that it does not constitute as good security in itself as do many other units. Moreover, it can be moved readily from one place to another, due to its very nature.

The few manufacturers who have experimented with shipping on consignment or on credit terms have had very unfortunate experiences, and it is the general opinion among manufacturers that the present system will remain in force even during times of keen competition because of its peculiar fitness for automotive merchandising. One sales manager expresses a pretty general opinion when he says that "it would be a catastrophe if manufacturers started shipping to dealers on consignment."

Two Facts

RECOGNITION of two facts is specially important in any discussion of the proposals made recently by dealers' associations to manufacturers.

The first is that manufacturers do not and probably cannot operate as a unit on internal merchandising policies, despite their organization in the form of the National Automobile Chamber of Commerce. Such an organization frequently makes it possible for the industry to present a united opinion on questions relating to the public or to other industries which affect each manufacturer in about the same way. An entirely different situation arises when the question at issue concerns only the industry itself and affects each individual manufacturer in a different way.

Changes of policy within the industry in the long run must come about through individual action rather than through attempts to make binding agreements. The latter procedure not only would be likely to come into conflict with some phase of Federal law, but would be foreign to the fundamental spirit of progressive business associations which fosters, rather than hinders, individual initiative and experimentation. Undoubtedly it would be to the benefit of the entire industry if all manufacturers would adopt certain policies, but such unanimity of action can be generated only from unanimity of opinion.

The second fact to be remembered is that many manufacturers already are making—and have been making for some time—serious, conscientious efforts to solve in a constructive way the problems presented by the dealers. Some of them have licked their most serious difficulties. Others still are far from the goal. But there is no question that much honest work is being done by individual car builders to better merchandising conditions. Admission of this fact need not obscure the many ills that still need to be remedied, but it may make for a better understanding between the retailers and producers.

Our Industry Today—

Better Demand from Dealers During August Shows Increasing Interest in Cars on the Part of the Consumer

NEW YORK, Aug. 25—With the new model season rapidly approaching an end and the outlook growing brighter for greater business in agricultural areas, the automobile retail sales situation shows distinct improvement. There continues a better demand from dealers, this reflecting a stirring of buying interest on the part of consumers.

After their experience with accumulated stocks during the spring of the year, dealers are not disposed to take more cars than retail demand justifies. Manufacturers, on their part, will regulate production programs solely by sales conditions in the field.

Actual sales volume has not taken a strong upward trend, but the increase is satisfactory and the outlook far more encouraging than it has been for some time. Contributing to the sales improvement, no doubt, is the fact that many prospective buyers have entered the market after waiting for the new models of cars to be announced.

Rural Possibilities

What will develop in the agricultural zones will not affect current production. As demand comes from those sections, schedules will be advanced to meet it. Good reports, however, are being received by manufacturers from dealers throughout the Northwest, and a buying movement of some extent may be expected to develop in a short time. Through his inability to be an important factor in automobile sales up to this time, the farmer is expected to loom large in the future. What is equally encouraging to his return to the market is the fact that, because of his long absence, he will not bring a used car with him.

With production keeping pace with demand and with demand having a slightly better tone, it would not be surprising if September, even with fewer working days, should show a stepping up from August production figures, which in turn probably will mount somewhat above the July total. July showed a greater output than in June, when production amounted to 245,817.

Outlook in Truck Field

Of the 262,876 cars and trucks produced in July, 237,652 were passenger cars, the decline in truck production that started in May of this year continuing and showing to an extent the hesitancy that prevails in commercial centers. Agricultural centers, however, will form a more important outlet for truck production than in the past, with the result that the truck end of the industry may be expected to take a steady swing upward. Conservatism has been predominant in truck operations. Continued activity is noted in manufacture of buses, for which there is a steady demand.

Buying Increasing, Detroit Discovers

August Retail Sales Better Than July, With Production Heavier

DETROIT, Aug. 25—August production will show a general increase over July, due more to absence of holidays and closed periods than to heavier operating schedules. The month has shown marked steadiness of operation, not setting up high totals but holding to a fixed pace of production from day to day. Additions to factory working forces have been made all through the month.

Dealers Taking New Models

A considerable part of the production during the month has been in excess of retail sales, a condition made necessary by the introduction of new models in a number of popular lines. Stocking of dealers in the sense that term usually implies, however, has not occurred, the process being simply to give dealers some of the new models for their active sales work. Any cars on hand through the country are scarcely more than a few days' supply in the face of an invigorated demand.

August retail sales have been much better than July, according to factory reports, though somewhat under the totals set up last year. Since the first of the month buying has gradually increased, the Ford report for the second 10 days being considerably larger. The last 10-day period in any month usually is the largest and this, continuing to be the case, is expected to bring the August total to a good healthy mark.

The farmer market has not developed in any considerable volume as yet—it is not expected to until after Sept. 1. Investigations throughout the wheat belt and the Central West generally are reported by factories to show farmers

ready to buy soon. Three years have gone by in promises of a good volume of buying without any considerable fulfillment, but this year will see realization, it is confidently declared.

Over capacity in parts and material plants under normal conditions is much increased under the present reduced rates of operations in the car manufacturing companies. This is resulting in extreme competition for business and as result the car companies are getting the advantage of prices which are admitted to be practically ruinous to the supply sources. It is no longer a question of the parts maker keeping his plant in operation and breaking even on his expenses. Losses in operating are now being absorbed in many cases to avoid the greater losses of closing down.

City Plants Feel Competition

Parts makers in the city and immediate vicinity are finding their proximity a disadvantage under present conditions because of high taxes and high labor costs. They are being forced to compete with manufacturers in many smaller cities of the country who are able to operate more cheaply and who are able to meet delivery requirements without difficulty owing to lower schedules in the car plants. Furthermore, there is no freight congestion of any kind at this time to handicap the out-of-the-district manufacturers.

Improvement Noticed, Milwaukee Bank Says

MILWAUKEE, Aug. 25—A note of encouragement is sounded in the current review of Milwaukee business issued by the largest local bank under the title of "Business and Financial Comment," when it speaks of a distinct pick-up of activities. This confirms the impressions gained by trade circles generally, and specifically among automotive men.

"Business in Milwaukee continued on about the same level in the first half of July as in June, but toward the end of the month signs of improvement began to appear," says the summary. "Tire manufacture in this territory is good. In recent weeks automotive parts and equipment manufacturers have been receiving a slight increase of business. A distinctly improved feeling pervades the shoe and leather industry. Shoe factories and hosiery mills have received a fair increase of orders, and the increase in shoe business has strengthened leather demand and prices. Furniture orders are reported on the increase, though forward orders are considerably below those at the same date last year."

Data now being gathered for the September report shows that the condition is still undergoing improvement in a gradual way.

Steady Production Features August

Chicago Zone Busy with New Models

Demand in Some Cases Said to Be Beyond Manufacturing Capacity of Plants

CHICAGO, Aug. 25—Concentration of promotion upon new models with the purpose of pushing them just as much as conditions will permit is the dominant strategy of automobile producers in this zone at the present time. Manufacturers have been exerting special efforts to shape conditions at factories and in the retail field for this purpose and they have been signally successful. In most instances factory stocks are low or a substantial nullity, the demand for new models in certain cases being beyond manufacturing capacity.

Along with this promotion goes the policy of supplying dealers, even when factory capacity is not strained, with only enough units to meet immediate demands. Thus production, while given greater freedom than was witnessed a month ago, is being held strictly to a conservative basis. There is little danger that output will be carried beyond a profitable point, for, as remarked by one factory executive, while the last part of the year might lack in volume output, the profit per unit should average up well with previous years and materially exceed that of the first half of the present year. No particular resistance is seen as a result of some slightly higher list prices.

Nash Increases Production

Nash is meeting gratifying response with its new line and has stepped up production accordingly, while Auburn also is finding a pleasing reception. Velie, like most others with new models to offer, followed a limited schedule, prior to introduction, but now with the new Velie line before the public it is expected that this company will move ahead at higher acceleration, supplying the requirements of the trade but pursuing its usual practice of not overloading retailers.

Apperson, which resumed a longer stride Aug. 18, curtailed production for July and August in order to be without a factory stock and practically no dealer stocks when it swings into production its new series of Apperson Sixes. According to factory advices, the new Apperson Six will embody improvements and some equipment changes that will be announced later. The Apperson "V" type motor will be continued. The policy here is typical of the general situation in noteworthy respects, it being Apperson's plan to respond to the retail demand but proceed slowly and feel out the market before actually going into enlarged production. Its September output will be

larger than that of August, however, and it is stated that production for September and the last quarter will likely run about 60 per cent of the first quarter, the full extent of increase depending, naturally, upon market receptivity.

Employment took a brace in July, but there still remains considerable unemployment in industry generally.

The Week in the Industry

Alfred P. Sloan, Jr., President General Motors Corp., has stated that no General Motors division in the future will require or permit dealers or distributors to carry stocks of cars at any season of the year beyond what is logical or economical.

Car production in both the Detroit and Cleveland districts will show an increase for August along with the increase in sales which has been practically countrywide. The effect of lessened sales in the first six months of this year is exemplified in the Willys-Overland semi-annual earning's statement which has just been made public. Earnings for the first half dropped from \$7,900,000 in 1923 to \$2,781,692 in 1924. This was equivalent to \$35 per share on the preferred stock for the first six months of last year compared with \$12.61 for the first half of 1924.

Tire production in the Akron district has increased to more than 85,000 per day. According to P. W. Litchfield, vice-president and factory manager of the Goodyear Tire & Rubber Co., this production will be maintained throughout the remainder of this year. American tire exports continue to lag behind the figures of previous years while the importation of casings is gradually increasing.

The five-day working week is said to be a permanent arrangement in the Ford plants. The effect of increased overhead of plant maintenance will be made up for by increased efficiency of men and operation during the five-day working period. Henry Ford said in an interview that he believes the tendency today is toward decentralization and a city to country movement. The plan for boosting Ford sales on a new \$5 a week plan has just been made public.

The Paige-Jewett dealers' dinner will be held on the evening of the second trade-day of each of the national shows. It is hoped that other companies will similarly advance the dates of their dinners.

Ohio Fall Outlook Encourages Makers

Both Car and Tire Manufacturers See Evidence of Improved Business

CLEVELAND, Aug. 25—Automobile men of this district are accepting reports from Akron of proposed increased tire production as evidence of a bright fall business for the entire automotive field. The Akron plants are said to be contemplating approximately a 10 per cent increase in production for the immediate future over that of the current period.

This upturn in the tire business corresponds fairly well with that reported by car builders of Cleveland and Toledo. Jordan, Peerless and Cleveland all show sales betterments for the six months period of this year over the first half of 1923. If these companies are able to maintain their planned production for the balance of 1924 the showing for the current year will be even better than that presented by the figures for the first half, they say.

Plants Adding Men

Faith in the market for automotive products for the remaining months of 1924 is indicated by the employment figures here. While industries engaged in one or another phase of motor business are by no means up to their normal employment records, practically all of the major plants have been taking back some of their former workers during the last week.

This employment condition maintains not only in Cleveland, but also in such centers as Akron and Toledo. Investigation in Toledo shows that the slow-down at the Willys-Overland plants during the past summer has resulted in a great many men being out of work for months. However, this condition is gradually correcting itself, as the Overland is adding to its factory force, or as the skilled men are finding employment in the plants of such centers as Flint and Cleveland, it is stated by employment offices of Toledo.

Dealer Position Strengthened

The present year in the automotive business, at least from the standpoint of producers here, has served as a period of elimination. There have been many changes in distributors and dealers, some going out of business entirely and others changing their lines. This shakeup has served a double purpose, it is claimed: In the first place, it has removed from the field distributors who were simply agents and not real salesmen, and it has taught manufacturers that there must be a closer sales cooperation between dealer and factory in the future.

\$12.61 Share Earned by Willys-Overland

Earnings for First Six Months
Reached \$2,781,692—A Drop
from Last Year

TOLEDO, Aug. 27.—Earnings of the Willys-Overland Co. for the first half of the current year were \$2,781,692, comparable with \$7,900,000 in the same period last year, according to the condensed balance sheet issued by President John N. Willys.

This is equivalent to about \$12.61 a share on the preferred and compares with \$35 a share earned in the same period of last year. Slackness in the industry during the second quarter of the year is largely responsible for the decrease in volume of earnings, but price cuts have had some effect.

During the period sales totaled 98,779, of which 77,699 were Overlands. This is compared with sales of 200,000 in the same period last year.

Despite the smaller volume of current business the company statement shows an excellent financial condition. Cash on hand is \$2,723,920; notes receivable, \$4,772,663, and merchandise inventories, \$31,938,106. A million dollars of the gold bonds were retired July 15. Current liabilities totaled \$7,458,508, which gives a ratio of more than five to one of net quick assets to liabilities.

Patents Written Off

Land value of \$1,749,567 and buildings and machinery totaling \$41,071,666 have been depreciated by \$13,525,730, bringing the total permanent assets to \$27,275,277. Patents have been written off. There are deferred charges to insurance, taxes and unamortized bond discount amounting to \$1,273,289. The profit and loss surplus is \$16,457,669.

Dividends on the cumulative preferred stock since Oct. 1, 1920, amounting to \$5,787,993, are unpaid.

Current liabilities are less than half what they were a year ago and merchandise inventories have increased only about 10 per cent.

Net tangible assets per share of preferred stock have been gradually increasing in the last three years. A year ago they stood at \$184 per share and today are about \$235 a share, as compared with \$150 a share at the end of 1922.

Car sales have lately been on the increase and gradual building up of production schedules calls for about 40 per cent increases in the present working force in the next few weeks.

There are more than 4500 men now at work at the local plant.

MALLEABLE ASSOCIATION MEETS

MOLINE, ILL., Aug. 23.—The western division of the American Malleable Casting Association held its annual meeting this week in this city, visiting local fac-

tories, hearing H. Bornstein, lately returned from a European travel, describe malleable iron industry conditions and advancements there, and playing golf. Mr. Bornstein is chemical engineer for Deere & Co. C. Howard Ross, general manager of the Union Malleable Works, East Moline, had charge of the program arrangements.

Federal Charges Denied by Another Wheel Maker

WASHINGTON, Aug. 27.—In a citation directed to the Hayes Wheel Co., the Federal Trade Commission charges the company with lessening competition and creating a monopoly in the automobile wheel industry through acquiring the whole of the stock or share capital of a competing company—the Imperial Wheel Co.

Imperial Plant Closed

JACKSON, Aug. 28.—Complaint of the Federal Trade Commission against the Hayes Wheel Co., charging lessening of competition through its acquisition of the Imperial Wheel Co., Flint, and thereby restraining commerce in the sale of automobile wheels, is described by Justin R. Whiting, attorney for Hayes Wheel, as "simply another evidence of too much government."

Mr. Whiting says:

The complaint appears to be in the nature of an inquiry rather than a prosecution. Things have come to a point, when a company can hardly make a move without explaining it to some commission or other. The Imperial Wheel Co. is just a small concern which has closed its plant since the Hayes company bought its stock.

The automobile trade is in the doldrums at present and when the Imperial's plant will be reopened is more than I can tell. We acquired the firm more as a matter of convenience than anything else, as we wanted representation in Flint. The combined companies certainly do not constitute a monopoly of the automobile wheel business.

Eck Handles Falls Affairs on Appointment by Court

MILWAUKEE, Aug. 25.—The Federal Court here has granted the petition of the First Wisconsin Trust Co. of Milwaukee for a receivership for the Falls Motors Corp., Sheboygan Falls, Wis., and J. B. Eck, who has been in charge of operations for the Falls company for some time past, has been named receiver and given complete charge of affairs.

Financial schedules have been ordered prepared for a review by the court. The Falls works are operating with a limited force and filling orders for passenger car engines.

The receivership petition was based on the claim that the Falls company defaulted in the first installment of interest, amounting to \$15,000, on a \$500,000 gold bond issue secured by a trust deed to the Milwaukee trust company, which, in due time, under the agreement, made demand not only for the interest, but the principal as well.

Marmon Adding Men for Greater Output

Prepares Way to Increase Production Following Reports of
Better Conditions

INDIANAPOLIS, Aug. 23.—Planning a production increase of 50 per cent for the 1924-1925 season, the Nordyke & Marmon Co. announces that during the last week it has built up its force to 1000 men and would expand the force to 2500 as rapidly as skilled workmen can be obtained.

The rearrangement of the plant and the revamping of the entire production lay-out has been completed to enable the company to meet its increased schedule for the coming year. President G. M. Williams personally directed this work. He returned this week from a swing around Marmon distributing points to find the plans worked out and everything ready to launch the increased production drive.

It is said that \$4,000,000 will be expended in labor on the new production schedule and about \$1,500,000 on materials at the local plant.

The expansion program was decided on because of the expected improved economic conditions the world over. The foreign outlook has improved so much recently that a short time ago the company sent a special representative to Europe to make a survey and to re-establish Marmon distributing points. This work was entrusted to Frank K. Hambly, who has been with the company and its New York distributor since war time.

Mr. Williams, after his return from his trip through the West and Southwest, predicts that business pessimism is giving way before a general feeling of optimism which prevails in the larger cities. He says that in Texas the cotton crop is beyond all expectations and that there is plenty of money in the banks in the larger cities.

Mack to Add to Capital for Expansion Purposes

NEW YORK, Aug. 25.—Additional capital is being raised by Mack Trucks, Inc., for further expansion of its bus and rail car departments. This money is being raised through a bond issue of \$4,500,000 additional common stock underwritten by Hayden, Stone & Co., consisting of 56,622 shares, which will be offered to stockholders at \$80.

Stockholders of record Sept. 22 will have the right to subscribe on the basis of one share of the new for each five shares now held. Rights to subscribe expire Sept. 22. Subscribers will not participate in dividends until next March, but an adjustment of interest will be made in connection with installment payments.

New Method Devised to Sell Weekly Plan

Ford's Detroit Branch Is Trying
Out Innovation of Financing
Corporation

DETROIT, Aug. 26—Motor Buyers, Inc., formerly the Finance Corp., handling Ford paper exclusively, has devised a new method of selling the Ford weekly payment plan to prospective purchasers which is now being given a trial in the Detroit branch district before being nationalized.

The plan was originated by Alonzo P. Ewing, president of the organization, and C. C. Winningham of this city, who have copyrighted all details under their names. Outlined at the recent annual convention of Ford branch managers, it made such an impression that a trial was decided upon, with the complete indorsement of the Ford Motor Co.

Advertisements in the Detroit daily newspapers Sunday launched the plan and bore immediate fruit, many persons turning in coupons clipped from the papers, and thus opening an account with the Ewing organization which means the ultimate purchase of a Ford.

As the plan works out, the finance company becomes the central depository for all funds paid from enrollments, for which it receives a 2 per cent commission on the delivery of the car by the dealer. It pays the bank in which the prospect makes his original payment of \$5 a 1 per cent collection fee and also pays 4 per cent to depositors. In this way it has the use of the money for its financing of sales, which relieves it from the necessity of borrowing from the banks.

The finance company sells its enrollment books to the dealers at \$3 each, which covers the cost of preparing the book and the cost of the collection and follow-up work which is part of the service. Following the sale of the book the account is turned over to Motor Buyers, which thereafter assumes responsibility for the enrollments, relieving the dealer of the necessity of keeping after the prospect and seeing that payments are made weekly.

Only one account is kept, that with Motor Buyers. All payments are credited to this account, the bank forwarding stubs from the regular payment books, which contain 40 coupons and stubs each, each representing a \$5 payment.

White Commences Work on Another Plant Unit

CLEVELAND, Aug. 27—Work has commenced on the second plant addition to be contracted for within the last few months by the White Motor Co. Construction will be completed about the first of December, and the new unit will add a net floor space of 52,000 sq. ft.

Broader View Is Being Taken of Commercial Vehicle's Place in Freight and Passenger Carrying

AN INTERVIEW WITH WALTER C. WHITE,

President of the White Co.

By John B. Abell,

Special Cleveland News Representative of the Class Journal Co.

Cleveland, Aug. 25.

EXPANSION of the motor bus business into an industry by itself, aided by wider adoption of legislation protecting bus operation, and growing cooperation of buses with electric railways are points stressed by Walter C. White, president of the White Co.

Motor transportation, Mr. White says, is only in the primary stage of development. Men representing every agency of transportation now take a broader view of the commercial motor vehicle's place in freight and passenger carrying.

The saturation point in the automotive industry, he says, is a topic of yesterday. Far-sighted men no longer take it seriously, particularly in reference to the recognized place of commercial vehicles, such as the motor truck and the motor bus, have in the national economic life. The public is acquiring this viewpoint, too, he declares, although the public more quickly grasps the individual benefits of bus development because bus growth has been so great during the past year that it has been a feature of the news of the day while truck development has been more gradual and its public benefit not so obvious except to business men directly concerned with it.

New uses are being found daily for trucks, he says, and highways are being used more intelligently. Today there is a better understanding of the economic benefit gained by the community through motor transportation on public highways. Road building is increasing yearly. With every new mile the trucks increase and prove their usefulness to the economic life, and the belief in an approaching saturation point correspondingly disappears.

The old idea of motor transportation, Mr. White says, was to let it take care of itself. It wasn't figured into the plans for the future—for instance, into new buildings. Now the day is beginning where truck transportation is considered so important that it is going to have more and more influence upon architecture. Transportation facilities will be built into every factory and into office buildings.

Mr. White dates the beginning of the new era of transportation from the war. Lessons learned in wartime, he says, gave business the first true picture of the possibilities of motorization.

Since then, he says, there has been continued improvement of truck manufacturing methods. Owners have learned to build transportation into business. The elements of stability of maker and of service have been realized. New fields have been opened. The most important of these are in conjunction with steam and electric railroads, the latter are using motor buses to help move passengers, the former are using motor trucks to move merchandise.

An equally important field of a different nature is occupied by motor trucks in railroad terminal work. Mr. White cites the situation in Cincinnati as an example. Railroads there are using trucks to handle less-than-carload lot freight and there have been enormous savings in time and money.

The new building will cost approximately \$200,000. It will be located at about the center of the White factory group and is to be used for receiving of incoming materials and parts. The receiving plant will be 68 by 280 ft. in dimension, with a basement and two floors.

One of the features of the plant will be a system of tunnels that will connect with other departments of the company. Through these tunnels materials and parts may be transferred to all parts of the factory without disturbing workers. Power trucks are used to transport the materials.

The receiving plant will be built of flat slab reinforced concrete, with mill roof, carried by steel trusses spanning the entire width. Floors have been figured for 400 lb. to the square foot on the first floor, and 300 lb. on the second level.

Replacement Parts Makers Enrolled in Association

CHICAGO, Aug. 25—Excellent progress toward a permanent organization is being made by the National Standard Parts Association, following the preliminary meeting held in Detroit last May of manufacturers and jobbers of dependable replacement parts.

At that time an executive committee was named and empowered to pass upon all applications for membership in the permanent organization, these applications to come up for final action at a meeting to be held in Chicago during the week of Nov. 10.

To date 22 replacement parts jobbers and 19 parts manufacturers have been accepted for membership by the executive committee, and 12 applications are now under consideration.

G. M. Drafts Policy on Stocking Dealers

Will Not Require Trade to Carry
More Than Is "Logical and
Economical"

NEW YORK, Aug. 27—"Manufacturing schedules will be kept in line with the trend of retail sales as we see it, and no General Motors division in the future will require or permit its dealers or distributors to carry stocks beyond what is logical and economical."

This is General Motors' future sales policy, as announced today by President Alfred P. Sloan, Jr. It follows a searching personal investigation of dealer conditions by Mr. Sloan and is a logical sequence of the course General Motors has been following for several months in holding down production to meet dealer demands, as borne out by monthly reports on sales to dealers and consumers.

The need of such a policy was discovered following several big production months last winter, when it was anticipated that there would be a record-breaking spring demand. General Motors planning to have sufficient cars on hand to fill all orders promptly. The demand did not come when expected, and in consequence dealers of all makes of cars were overstocked. Then General Motors tempered the wind to the shorn lamb, cut production sharply and for the last few months retail sales have been about double factory production.

In announcing the sales policy Mr. Sloan goes to considerable length in analyzing dealer conditions as he found them, and his statement shows that he has given considerable time and thought to working out a policy for the various divisions of General Motors to follow hereafter.

Dealers Salvage Parts Taken from Used Cars

DETROIT, Aug. 27—Increasing sale of used parts throughout the country is beginning to be felt by the service departments of factories. Dealers in a number of lines are reported as installing used parts departments, the stocks for these being made up of good parts from used cars which dealers dismantle themselves, selling the remainder as scrap.

Through the used parts departments these dealers are enabled to offer a slightly higher than scrap valuation for old cars of certain makes, recouping on parts salvaged which are still capable of service. These parts are being offered for sale at much lower prices than the parts in the regular service departments and are finding an increasing market.

PRESIDENT A. P. SLOAN, JR., OF G. M. C. DEFINES POLICY THAT WILL BE FOLLOWED IN FUTURE RELATIVE TO DEALERS' STOCKS

NEW YORK, Aug. 25—Alfred P. Sloan, Jr., president of General Motors Corp., has defined the future sales policy of the corporation in the following statement:

"I have noted a number of references in the automotive press recently dealing with a subject which I believe to be very much in the minds of all automobile dealers, viz., the policy of the manufacturer with regard to stocking of cars by dealers during certain seasons of the year. Recently I have contacted personally with a very considerable number of distributors and dealers, and the subject also has come up for discussion in conferences I have had with bankers in various cities who have direct contact with the subject through the financing of dealers in their respective communities.

"Speaking for General Motors, I recognize that the economic position of the dealer as a whole is not as satisfactory as we would like to see it, and on account of the fact that the dealer is an essential link in the chain of circumstances from the production to the ultimate disposal of any car, manifestly his position must be recognized and soundly established.

"I have heard the theory advanced that the dealer will sell more cars if he is stocked to the limit. As a general rule, I don't believe this is so, at least when considered from the standpoint of a long pull over a period of years. On the contrary, any unreasonable burden in the matter of stock thrown upon the dealer organization results in an economic loss and must be reflected in increased discounts and list prices to compensate for the reduced turnover of capital invested in inventories. On the other hand, I believe that any dealer who places any value on the car franchise that he may have is perfectly willing to do his part in carrying a just proportion of such burden as should be carried.

"Retail sales, representing the movement of cars into the hands of users, is subject to seasonal fluctuations over the course of the year. Should production be allowed to fluctuate to a similar degree, the tendency would be to increase manufacturing costs. Therefore, in the interests of economy, plants should be operated at as level a rate as possible. This requires a seasonal accumulation of stocks in the hands of dealers and distributors. The rapid growth in the proportion of closed cars has served to flatten out somewhat the peak of spring demand. I believe it is possible for the manufacturer to maintain practically a level line of production and yet not subject its dealers and distributors to any undue burden in the matter of seasonal accumulation of stock.

"We have given a great deal of study to retail sales statistics of the past and believe we now have a reliable measure of the ordinary seasonal character of such demand, and are in position to gage the current trend with far greater accuracy than has been possible in the past. General Motors policy has been definitely established. We shall maintain a reasonably level line of plant operation in order to gain a maximum of efficiency in manufacturing costs. The trend of sales to consumers will be appraised monthly and production schedules will be adjusted promptly if there is any indication of an altered trend of retail demand. Manufacturing schedules will be kept in line with the trend of retail sales as we see it, and no General Motors division in the future will require or permit its dealers or distributors to carry stocks beyond what is logical and economical."

Several makers have had their attention brought to the fact that dealers are selling salvaged parts of this kind in competition with the regular parts from factories, and are studying the situation for its present actual effect on their service business and what it may develop. The present view is that it is a legitimate procedure as conducted and aids the dealers somewhat in their used car work. It will not, however, be permitted to extend to the buying of used parts from other sources and their resale in conjunction with a regular new parts business.

The condition applies chiefly to the lower priced lines as at present reported with, however, some activity in medium priced lines in which there are many older models in operation.

Employment in Toledo Shows 1,242 Increase

TOLEDO, Aug. 25—A gain of 1242 employees was shown last week in the 51 plants reporting weekly to the Merchants' & Manufacturers' Association here. The total at work was 15,040. This is compared with 28,870 workers the same week last year.

About half of those now employed are working on reduced schedules averaging 37.6 hours a week.

Betterment of conditions at the Willys-Overland plant where about 5500 men are now at work and the resumption of operations at the Champion Spark Plug Co., which had been virtually closed for inventory, is largely responsible for the better showing this week.

Men of the Industry and What They Are Doing

Kirke Moore Directs Perrot Sales

D. Kirke Moore has been chosen as director of sales of the Perrot Brake Corp. of South Bend, Ind., of which Vincent Bendix is president. Mr. Moore is a veteran of long standing in the automotive industry, at one time having been sales manager of the Weston-Mott Axle Co., following which for several years he was manufacturers' agent in Cleveland. Since then he has been associated with the Spicer Manufacturing Co. and other axle concerns.

Reeves and Mooney Returning

On the Berengaria, carrying the Prince of Wales and due to dock Saturday, are Alfred Reeves, general manager of the National Automobile Chamber of Commerce, and James D. Mooney, president of the General Motors Export Co. Mr. Reeves has been away for two months visiting motor centers in Europe as a representative of the Chamber, while Mr. Mooney has been on an extended trip which has carried him nearly around the world.

Matheson Directs Oakland Sales

Charles W. Matheson, recently added to the General Motors Corp.'s executive headquarters as assistant to the president, Alfred P. Sloan, Jr., will also serve as vice-president and director of sales of the Oakland Motor Car Co., a General Motors unit. Mr. Matheson is thoroughly familiar with this work, having been vice-president and director of sales for Dodge Brothers for many years prior to forming his present connection.

C. J. Nephler Resigns

His resignation as sales manager of the Oakland Motor Car Co. will become effective as of Sept. 1. C. J. Nephler has announced, severing a connection dating back to February, 1917, when he joined Oakland as assistant manager. He has been in charge of sales since 1920. Mr. Nephler has been a sales executive for 31 years, the last eight being devoted to the automotive industry. Formerly he was a farm implement man, having served with the Oliver Chilled Plow Co. and the Bradford Manufacturing Co. His entire work has been with these three organizations. In retiring from Oakland, Mr. Nephler is planning a three months' vacation, after which time he will form a new connection.

Craig Heads Association

Joseph A. Craig, general manager of the Chevrolet branch factory at Janesville, Wis., and previously holding the same position with the Samson Tractor Co. works, has been elected president of the Greater Wisconsin Association, organized under the auspices of the Milwaukee Association of Commerce. The object of the organization, the first of

its kind in Wisconsin, is to work to restore Wisconsin's reputation and to change the attitude of its legislative bodies toward industry.

MacDougall Sent to Australia

M. C. MacDougall of Osage, Iowa, has been sent to Australia by the Hart-Parr Co., tractor manufacturer, to open a branch house in Melbourne. He will serve as the company's representative in Australia for the next two years. Mr. MacDougall has spent several months in Australia in the interests of the company. He has returned to Osage to get his wife and three children and will sail for his new post in a few days.

French Rejoins Badger

Harry L. French has again associated himself with the Badger Manufacturing Corp. as sales manager. Mr. French was connected with the Badger company practically from its inception, except for the last two years, when he served as territorial manager in the Central and Southwestern States for the Milwaukee Motor Products Co., manufacturer of the Milwaukee timer.

McDarby Joins Distributor

Neil E. McDarby has resigned as assistant sales manager of the Moon Motor Car Co. to become associated with the Embleton Motor Co. of San Antonio, Tex., distributor for Moon cars. Mr. McDarby started with the Moon company as advertising manager five years ago and in April, 1923, became assistant sales manager.

Moseley Is Maxwell Director

M. P. Moseley, vice-president of the American Exchange National Bank of New York City, has been elected a director of the Maxwell Motor Corp.

Brin Becomes Trade Commissioner

The appointment of Leonard M. Brin, former chief of the research section of the Automotive Division of the Department of Commerce, to the position of Assistant Trade Commissioner to Mexico, has been announced by Secretary Hoover. He will be assigned to the Mexico office and will specialize in cooperating with automotive exporters to that country. Prior to his affiliation with the Government, Mr. Brin represented several automobile accessory manufacturers in Mexico through the Mexico Auto Supply Co. of Mexico City. In the department he will be succeeded by Palmer Elder.

Muirhead Succeeds Byers

Allan S. Muirhead of Toronto has been named vice-president of the Gray-Dort Co. at Chatham, Ont., succeeding J. P. Byers, who has resigned. W. S.

Goodeve has been named general manager. Mr. Byers will remain on the directorate. The company is planning a program of expansion in which it will devote special attention to the export field.

New Fisher Fast Freight to Have 1½-Ton Capacity

DETROIT, Aug. 28—Further details regarding the new Fisher Fast Freight have been released by the Standard Motor Truck Co.

It will have a 1½-ton capacity, a maximum speed of 35 m.p.h. and will carry a price of \$1,295. The engine will be a four-cylinder unit with a 4¼-in. bore and 4½-in. stroke. Clutch and gearset will be mounted as units with the power plant, and the latter will provide three speeds forward and reverse. The propeller shaft will be a two-piece design, with three universals, the forward portion of the shaft being supported by a self-aligning ball bearing.

The frame will be a semi-flexible design with straight channel side rails 5 in. deep. The wheelbase will be sufficiently long to take an 11-ft. body. Pneumatic tires, 30 x 5 front and 32 x 6 rear, will be regular equipment.

Walker Increases Lists of Trucks \$200 to \$400

CHICAGO, Aug. 26—Increases in prices ranging from \$200 to \$400 and affecting its entire line of electric commercial trucks, with the exception of the one-half-ton model, have been announced by the Walker Vehicle Co. The following table gives the old and new prices:

Model	Tons Capacity	Old Price	New Price
12	½	\$1,900	\$1,900
15	¾	2,600	2,800
22	1	2,800	3,000
42	2	3,800	4,200
P	3	5,600	6,000
N	5	6,400	6,700

OVERLAND TO INCREASE PRICE

TOLEDO, Aug. 27—A slight increase in price of the Overland models will be announced next week.

MOON PRICES HIGHER

ST. LOUIS, Aug. 26—The Moon Motor Car Co. announces a price increase of \$100 on each of its models.

CADILLAC MANAGERS MEET

DETROIT, Aug. 27—District managers of the Cadillac Motor Car Co. are holding their annual convention at the factory this week. H. H. Rice, president, and Lynn McNaughton, vice-president, in charge of sales, are presiding.

9,945 Cars Shipped Abroad During July

So Far This Year 90,236 Have
Been Exported, Which Is
More Than Year Ago

WASHINGTON, Aug. 27—Exports of passenger cars and trucks in July declined from the corresponding month of last year, according to figures compiled by the Department of Commerce. In July of this year 9945 cars were shipped abroad and 1752 trucks, compared with 11,817 and 3105 respectively a year ago.

Total car exports for the seven months of 1924 amount to 90,236 and truck exports 16,834. The year so far is well ahead of a year ago in both car and truck shipments.

Figures for the seven months' period

in both car and truck shipments and for July of last year follow:

	Passenger Cars	Trucks
	1923	1924
July	11,817	3,105
January	12,614	2,845
February	13,329	1,704
March	14,035	2,839
April	15,808	2,764
May	14,363	2,739
June	10,142	2,191
July	9,945	1,752
Total (1924)	90,236	16,834

Details of the shipments of automotive products for July are given in the table published on this page.

Tire Exports for July

WASHINGTON, Aug. 27—A total of 108,476 casings and 108,506 tubes were exported from the United States during July, the Bureau of Foreign and Domestic Commerce announces.

More Foreign Tires Reach This Country

Exports from United States Drop
in Seven Months Below
Figures for 1923

AKRON, Aug. 27—While American exports of automobile tires continue, as predicted, to lag behind those of previous years, a great increase in imports of casings is noted by Akron rubber officials after studying Government reports.

During the first three months of the year imports of tires into this country amounted to \$383,718 as compared with imports during the whole of 1923 of \$74,017. In April of this year the total imports amounted to \$165,000. During the four months the total number of tires brought into the country was 101,000.

(Continued on page 428)

Exports, Imports and Reimports of the Automotive Industry for July of Current Year and Total of Seven Months Ending July 31, 1924

	Month of July				Seven Months Ending July			
	1923		1924		1923		1924	
	No.	Value	No.	Value	No.	Value	No.	Value
EXPORTS								
Automobiles, including chassis.....	14,957	\$9,405,885	11,703	\$8,606,287	91,588	\$61,359,428	106,655	\$76,003,265
Electric trucks and passenger cars.....	35	45,831	.....	.....	145	203,408	.....	.....
Motor trucks and buses, except electric:								
Up to 1 ton.....	2,655	922,187	841	382,753	11,829	4,081,527	7,677	3,282,867
Over 1 and up to 2½ tons.....	353	434,528	421	549,224	2,336	2,834,928	3,023	4,041,351
Over 2½ tons.....	97	221,785	122	258,200	520	1,196,922	842	2,042,810
Total motor trucks and buses, except electric	3,105	1,578,500	1,752	1,340,644	14,685	8,113,377	16,323	11,177,789
PASSENGER CARS								
Passenger cars, except electric:								
Value up to \$500 inclusive.....	6,510	2,392,359	4,314	1,596,397	34,559	12,213,732	35,294	12,806,640
Value up to \$800	1,693	1,137,443	2,661	1,886,292	16,461	11,016,048	26,728	17,921,058
Value over \$800 and up to \$2000.....	3,368	3,566,078	2,758	3,160,082	24,075	25,247,744	26,253	28,493,767
Value over \$2000.....	246	685,674	212	614,212	1,663	4,565,119	1,963	5,501,918
Total passenger cars, except electric.....	11,817	7,781,554	9,945	7,256,983	76,758	53,042,643	90,238	64,723,383
PARTS, ETC.								
Parts, except engines and tires*.....								
Automobile unit assemblies*.....	3,397,171	534,415	1,869,227	367,716	21,375,812	3,341,090	7,483,736	1,640,960
Accessories and parts*.....	18,194,791	4,488,429	.....	.....	136,602,605	31,256,874	.....	.....
Automobile service appliances (not elsewhere specified)*.....	179,614	88,079	781,376	356,848	805,349	431,061	3,672,338	1,450,217
Station and warehouse motor trucks.....	10	8,745	12	16,372	108	52,628	89	64,773
Trailers	93	24,435	19	9,750	787	283,287	226	103,300
Airplanes	9	32,521	1	600	36	261,251	43	269,677
Parts of airplanes, except engines and tires*	5,174	3,036	6,263	9,593	93,099	23,277	118,573	137,370
BICYCLES, ETC.								
Bicycles and tricycles.....	1,736	17,350	718	15,578	16,219	121,834	3,922	99,215
Motorcycles	1,524	381,541	604	147,669	13,624	3,195,564	10,328	2,518,224
Parts, except tires*.....	371,095	177,167	156,642	93,337	2,068,691	1,036,977	1,881,733	1,000,187
INTERNAL COMBUSTION ENGINES								
Stationary and portable:								
Diesel and semi-Diesel.....	39	7,427	22	9,812	765	318,700	1,094	399,146
Other stationary and portable:								
Not over 8 H.P.....	2,496	202,064	1,745	172,668	17,422	1,664,404	13,180	1,214,172
Over 8 H.P.....	772	291,331	478	248,186	1,510	757,857	1,584	1,013,773
Automobile engines.....	17	4,792	28	6,243	2,696	308,394	818	97,469
Motor trucks and buses.....	2,458	271,177	914	168,794	27,068	3,257,624	13,846	2,110,249
Passenger cars	116	21,328	232	62,941	994	218,538	686	208,575
Tractors	4	2,025	8	21,818	24	23,052	120	184,774
Aircraft	579,563	265,502	422,558	256,416	4,350,914	1,920,219	5,140,418	2,197,518
Accessories*								
IMPORTS								
Automobiles and chassis (dutiable).....	74	79,111	37	49,864	388	536,670	.....	497,015
Other vehicles and parts for them (dutiable)	.....	200,087	.....	102,123	.....	1,220,520	.....	765,579
REIMPORTS								
Automobiles (free from duty).....	38	43,496	41	48,073	2,036	2,264,276	195	271,736

* Pounds

No Break Expected in Tire Production

Goodyear Official Sees Akron Producing 85,000 Daily for Rest of This Year

AKRON, Aug. 27—P. W. Litchfield, vice-president and factory manager of the Goodyear Tire & Rubber Co., expresses the opinion that the present production pace, which has been increased to more than 85,000 tires a day in this district, will be maintained without a break throughout the remainder of the year.

The general opinion until very recently was that the production speed could not be maintained, and that the industry would experience a slump early in October, which would last a few weeks until the winter schedule was definitely undertaken.

Mr. Litchfield states that the demand for tires during July was 50 per cent greater than was anticipated, and that this demand still continues.

It is also estimated by other authorities that the prediction that 4000 additional men and women are employed in the industry is probably too low rather than too high. It has been officially announced by the B. F. Goodrich Co. that more than 1500 men were taken on by this company alone.

Men Still Being Hired

Hiring continues. Men are being urged by present workers to come to Akron for steady work. Goodyear Tire & Rubber Co. has announced that those who will forego their vacations will receive their regular vacation pay in addition to the wages they receive while at work.

The increase in production is overcoming to some extent the drop in prices of tires registered two months ago, and the increase in raw material prices, it is stated, but admissions are frank that the increased production is not netting the industry the profits which it should yield.

Crude rubber during the week reached 30 cents a pound, as predicted, and it is believed in some quarters that the advance, which is attributable entirely to the manipulation of British planters rather than economic conditions, may eventually lead to an increase in tire prices.

Claims Charter Prevents Railroad from Using Bus

DETROIT, Aug. 27—Opposition to the granting of bus operating licenses to the Michigan Railroad Co. on the ground that its articles of incorporation specify only the operation of steam and electric lines, was made by the Northern Transit Co. before the State Public Utilities Commission at a hearing this week.

The Northern company and the Michigan Railroad Co. are contesting for the

right to operate buses between Bay City, Saginaw and Flint. The Northern company has been operating buses but its permit recently expired and the railroad company sought to supplant it, offering increased service. The question of the legal right of the railroad company to operate buses under its incorporation entered the controversy for the first time this week.

Members of the commission indicate that this question may bring up a new consideration in common carrier cases, involving the right of rail companies in the State to operate motor vehicles as supplementary to their regular service.

National Acme Officials Meet Death in Accident

CLEVELAND, Aug. 25—E. C. Henn, formerly general superintendent and vice-president of the National Acme Co. of Windsor, Vt., manufacturer of automatic screw machines, and Oscar A. Smith, superintendent of the screw products division of the same concern, were killed when the car in which they were riding was struck by an express on the Nickel Plate Railroad, near Painesville.

Mr. Henn had been with the National Acme company from its beginning in 1901 until last spring, when he was succeeded by his son, Oliver L. Henn, and was one of the best known engineers in the machinery field. At the time of his death he was president of the Cleveland Athletic Club. Mr. Smith had been associated with the company for 30 years and was responsible for many of the improvements in automatic screw machines. He was a member of the Society of Automotive Engineers.

Akron Voters to Decide Bus Bond Issue Question

AKRON, Aug. 27—Announcement is made by Mayor D. C. Rybolt that Akron voters will have placed before them at the November elections a \$3,000,000 bond issue to purchase and operate a municipally owned bus system.

Bus transportation to replace present street car transportation has been one of the favorite measures advocated by Mayor Rybolt since the opening of difficulties between the city and the Northern Ohio Traction & Light Co. which operates the city traction system.

Much doubt is expressed, however, regarding the ability of the administration to carry the bond issue since the voters turned down a \$3,000,000 bond issue for sewers, admittedly essential, at the last primary election. This bond issue will be resubmitted at the same election along with that covering motor buses.

WASHINGTON S. A. E. MEETING

WASHINGTON, Aug. 27—The first meeting of the Washington section of the Society of Automotive Engineers will be held at the Cosmos Club Sept. 26. The speaker will be Thomas Midgley, Jr., and his subject will be "The Chemical Control of Gaseous Detonation."

Short Working Week Permanent with Ford

All Production Plans Based on Five-Day Operations—Wage Schedules Unchanged

DETROIT, Aug. 27—The five-day work-week is now to all intents and purposes a permanent institution in the production plants of the Ford Motor Co., it has been learned from authoritative sources. All production plans are now based upon five-day operations. Any increase in this schedule will be only in cases of emergency and will be regarded practically as overtime operation in computing wages.

With the rearrangement of its production facilities, which includes the changing of several departments from Highland Park to River Rouge and the expansion generally of all departments at the two plants, the company now has a production capacity of 8900 cars daily. This capacity will reach 10,000 daily when all building and expansion projects now under way are completed.

Expects Greater Efficiency

Increased efficiency in all departments has made this present capacity possible. Changes which have been under contemplation for several years relative to the operations which could be carried on most successfully at the two plants, have now been carried out to a large extent. The result has been more room and greater efficiency in operation for all departments together with a lessening of the handling operations between plants.

No changes in wage schedules are contemplated under the new work week arrangement. The difference in pay between five-day operation and the former full week is slight, requiring little if any adjustment of living arrangements. The effect upon the health and welfare of employees is considered as fully compensating for any slight loss in money return.

Office Help Included

Fully 60 per cent of the office help will likewise be under the five-day work-week provisions, these for the most part being the clerical help. Those holding the more important salaried positions are not affected. Vacations during the year are not affected, these being granted only to those holding the more important positions throughout the organization.

Any effect upon the overhead of plant maintenance occasioned by the application of the shorter work-week is made up for by the increased efficiency of workmen and operations during the working period, according to the company's position. It will have in reserve constantly one full potential day's production to meet emergencies of demand and will be in a better position at all times to regulate its operations.

Trade Day Selected for Dealer Dinner

In Order to Help Innovation at
New York and Chicago Shows
Paige Changes Date

DETROIT, Aug. 26—Plans so far made for dealers' dinners and meetings at the coming New York and Chicago shows do not indicate any action toward moving these functions up to the scheduled trade days set for the Friday and Saturday preceding the general opening. With the exception of the Paige-Jewett dinner meetings, which will be held on the Saturday of the trade days in both New York and Chicago, there has been no advancing of any of the usual dinners.

Probably the principal reason why there will not be any concentrating of these dealer events on the trade days is the belief that there is not enough banquet hall space to accommodate all these events in two nights. This condition applies more particularly to Chicago, but even in New York it is felt there would be extreme difficulties in making satisfactory arrangements.

Arrangements Previously Made

Factory executives declare, furthermore, that most of the arrangements for dinners at the coming show were made preliminary to the announcement of the trade day plans, several of them being arranged immediately following the dinners last winter. Arrangements for the 1926 shows may be made to conform with trade day plans, officials say.

The Paige company, through H. M. Jewett, its president, who also is chairman of the show committee of the National Automobile Chamber of Commerce, in announcing the holding of its dinner on the trade day nights, says it is doing this to bring to the trade days all the cooperation it can. All of its dealers will be brought to the shows on these days with the Saturday dinner and meeting as a special attraction. All of its wholesale business will be transacted in these two days, the company declares, leaving the balance of the week entirely to retail work.

Will Release Executives

By concentrating its dealer effort in these two days the company will release all the executives from show activities through the remainder of the week. No headquarters will be maintained at hotels through the week as formerly, practically everyone returning to the factory to resume their regular duties on Monday.

In this way, said Mr. Jewett, the company will derive the fullest benefit from the plan of concentrating wholesale activities in the assigned trade days and give its retailers the chance to realize through the rest of the week on the general public attendance.

Dodge Brothers show week plans, though not yet fully set, are for an ex-

pansion of the dealer activities it initiated last year. It will have the private exhibit for dealers running all through the week, bringing in dealers by groups each day. Hupp, Oakland, Oldsmobile, Chevrolet and Rickenbacker dinners and luncheons will be held through the week. In each of these cases show week headquarters will be maintained until after the dealers' meetings, as in former years. These are the only companies in this district which have regular show week dinners.

Other companies and those mentioned as well, look for a larger attendance of the local dealers on the assigned trade days, but feel that the outlying dealers will scatter through the week, much as formerly. Efforts will be made, however, to bring as many dealers as possible in on the opening days, so that the trade day plan may get the fullest possible support.

Appeals Court Upholds Moto-Meter Decision

PHILADELPHIA, Aug. 25—The United States Circuit Court of Appeals, sitting at Philadelphia, has handed down a decision affirming the decision of the District Court rendered last spring, which held the Pyrene Manufacturing Co. of Newark, N. J., in contempt of court for violating the permanent injunction granted some time ago to the Moto-Meter Co., Inc., of Long Island City, N. Y., on Boyce patent No. 1,090,776. The District Court imposed a fine of \$2,500 upon the Pyrene company, which was upheld upon appeal.

The device on which the contempt proceedings were based was the Pyrene company's Guardene instrument, similar to that enjoined more than a year ago but to which the defendant had added a flexible wire mesh extension, alleged to dip into the water in the radiator. The court held that this construction did not avoid the Boyce patent.

Southern Motors Assets Bought by Shareholders

HOUSTON, TEX., Aug. 27—Assets of the Southern Motors Manufacturing Association, Ltd., in receivership since November, 1923, have been sold to the National Motors Fiscal Agency. The consideration was \$300,000, while the buying concern assumed all taxes, amounting to about \$15,000. There was a cash payment of \$65,000.

According to J. E. Blevins, president of the association, the transaction will result in reorganization, as the fiscal company is acting as trustee for the shareholders, who have adopted the plan of reorganization.

Future plans call for the sale of the plant to some other motor manufacturing concern or a consolidation. The plant and site of 77 acres on the Houston ship channel is valued at \$600,000. The plant is equipped to provide its own power, light and water.

N.A.C.C. Will Back A.A.A. Truck Branch

Committee to Assist in Its Formation
Will Be Named at
Directors' Meeting

NEW YORK, Aug. 27—Following the monthly meeting of the directors of the National Automobile Chamber of Commerce, next Thursday, it is expected that President Charles Clifton will appoint a committee to cooperate with the American Automobile Association in the formation of the new division of the A. A. A. for commercial car users.

Decision on the part of the A. A. A. to organize the new division was reached several months ago, when the N. A. C. C. voted to assist in the formation of this branch, which is expected to be in the nature of a national association of users of commercial vehicles, banded together to thrash out problems such as policies on legislation, with the result that it will be possible to present a united front at legislative hearings.

Plans Not Matured

While plans have not been fully matured, it is now certain that both bus and truck owners will have an opportunity early this fall to enroll under the banner of the A. A. A. Announcement has not yet been made of just what form the new division will take. It is regarded as almost certain, however, that provision will be made for taking into membership intact the various State bus and truck associations. Campaigns to increase the effectiveness of these State organizations, backed by the A. A. A. both through its national officers and its State and local clubs will follow.

The A. A. A. staff at Washington will soon be enlarged to handle the new division. Besides efforts to obtain as members existing State and local bus and truck organizations, efforts will be made to recruit membership for these groups, and in the case of truck associations, largely among the big fleet operators. Assurances already have been received as a result of a preliminary investigation that the big fleet owners will welcome the opportunity to obtain the type of service that will be available.

Research Department

One of the paramount services to truck and bus owners which will be given will come through the creation of a research department at A. A. A. headquarters at Washington, which will collect and distribute facts about the economics of highway transportation which have not heretofore been generally available. Emphasis also will be laid upon the importance of both keeping and understanding cost records.

In legislative activities the new division will function in coordination with the Motor Vehicle Conference Committee which hitherto has not had representation from bus and truck owners.

Bright Crop Outlook Better Texas Sales

Business in New Cars Gains 12 Per Cent in Thirty Days— Much Money Circulating

DALLAS, Aug. 25—The marketing of a \$70,000,000 grain crop, the disposal of a \$20,000,000 vegetable and a \$5,000,000 fruit crop and the beginning of the movement of a \$500,000,000 cotton crop in Texas is being plainly felt in the automobile trade throughout the State.

These crops, together with a \$10,000,000 rice crop and the continual movement of millions of dollars' worth of oil, lumber and cattle, have put much money in circulation and will put millions more within the next 60 days.

Money is easier in Texas than it has been in 10 months. The State produces more than 45 per cent of the nation's cotton crop. Farmers are liquidating accounts and putting money in the banks. Merchants are more confident of the future and everybody is optimistic.

The actual sales of new cars within the last 30 days were 12 per cent greater than for the 30 days that preceded. They were 18 per cent better than for the same period last year.

In San Antonio more than 2100 cars were sold in 30 days. Houston dealers sold more than 1100. Dallas dealers sold a little more than 1300. Fort Worth dealers delivered 1000, Waco sold 700, Galveston 300 and Wichita Falls and Amarillo about 450 each. The used cars sold in these cities were about twice the number of new cars.

In the rural districts the medium priced car—\$1,250 to \$2,500—are the favorites. The majority of the orders are for closed cars. Rural dealers are not stocking very heavily, but they have made arrangements to get what they want in a hurry. Their distributors in the cities will be able to take care of them. About 70 per cent of the sales are made on "trade-in basis" and the big majority of them on part pay time. Thirty days hence the trading in the cotton sections will be mostly for cash.

Hydraulic Brake Makes Contract with Wagner

ST. LOUIS, Aug. 25—The Wagner Electric Corp. has reported the signing of a contract with the Hydraulic Brake Co., holding corporation owning and controlling the Lockheed patents on hydraulic brakes for automobiles. The chain of service stations operated by the Wagner company throughout the United States and Canada will become the national service organization of the Hydraulic Brake Co.

The contract also provides that the Wagner company will be the sole licensee of the Hydraulic company for the manufacture of replacement parts for sale to

Business in Brief

Written exclusively for AUTOMOTIVE INDUSTRIES by the Guaranty Trust Co., second largest bank in America.

NEW YORK, Aug. 27—Some evidence of further improvement in trade and industry appeared last week, although the gains were confined to a few lines. Security and commodity markets experienced a rather sharp reaction following the rapid advances of recent weeks.

The official report on the cotton crop, based on condition Aug. 16, forecast an output of 12,956,000 bales, which compares with the previous estimate of 12,351,000 bales. The condition of the crop is placed at 64.9 per cent of normal as against a ten-year average of 63.2 per cent on Aug. 25. The report was followed by a break of more than a cent a pound in the New York market on Monday of this week.

Car loadings in the week ended Aug. 9 numbered 942,198, comparing with 945,731 in the preceding week and 973,750 in the corresponding period last year, when activity was curtailed by observance of the funeral of President Harding. For four weeks of July loadings totaled 3,526,500 cars, as against 3,625,472 for four weeks in June.

Cotton spinning activity, as measured by active spindle hours, declined in July, the total for that month being 3 1/3 per cent below the June figure and 27 per cent below that for July, 1923. The average activity last month was at 60 per cent of capacity on a single-shift basis, which compares with 64.6 per cent in June and 87.3 per cent a year ago.

Production of crude petroleum in the week ended Aug. 16 averaged 2,029,650 barrels a day, comparing with 2,010,950 in the preceding week and 2,250,450 in the corresponding period last year. The gain was mainly due to increased output in Oklahoma, while California and Arkansas showed the largest declines.

Fisher's index of wholesale commodity prices stood at 147.1 last week, as compared with 148.5 in the preceding week and 147.9 two weeks before.

the public and that all these parts will be manufactured in St. Louis and distributed through Wagner stations.

The Wagner company also has been licensed to manufacture Lockheed equipment for new cars, and has closed several contracts with automobile manufacturers.

Farmers' Wives Want to Commence to Buy

Those in Northern Ohio Have as Keen an Interest in Cars as City Women Have

CLEVELAND, Aug. 27—Sales of new cars in this city during August have proceeded at a rate that will not suffer when compared with the volume of the corresponding month last year, and the Ohio farmer is not in the market to any extent.

Threshing of wheat and oats is just under way in the Cleveland territory and the farmers around here are certain to get their crops to the markets in time to take advantage of the high prices that now prevail.

A trip through the country districts of northern Ohio reveals that farmers' cars are in poor condition and that many farmers who drove cars when times were better than they were until recently are without motor vehicles today. The general condition of such cars as are being driven bears witness to the extensive effect adverse economic conditions have had on the farmer.

Mental Attitude Good

The mental attitude of the farmer and his wife is good for future business. The wives have the same longing for cars that the women of the city have and, above all, they want the crops harvested and marketed so that they can go on a belated shopping expedition.

From the stepping up in August sales it is possible that farmers have been making some purchases during the month.

35,000 Sales in 8 Months Made in Washington State

SEATTLE, Aug. 28—Approximately 35,000 new cars were sold in the State of Washington during the first eight months of 1924, and of this total approximately 23,000 were disposed of in western Washington, of which the largest towns are Seattle, Tacoma, Everett and Bellingham.

Approximately 46 per cent of all cars sold in the State of Washington were Fords, and indicative of the selling ratio of the seven largest selling cars in western Washington in the first six months are the following figures:

Ford	8,510
Chevrolet	3,180
Star	1,128
Dodge Brothers.....	953
Buick	1,023
Overland	687
Studebaker	671

Twelve other makes of cars were above the 100 mark in State-wide sales in six months: Oldsmobile, 689; Maxwell, 529; Oakland, 405; Essex, 328; Willys-Knight, 319; Nash, 268; Hupmobile, 175; Jewett, 166; Hudson, 162; Gray, 116; Chandler, 108; Chrysler, 105.

S.A.E. Will Discuss Bus, Truck, Rail Car

Completes Program for Two-Day
Group of Meetings to Be Held
in New York

NEW YORK, Aug. 25—Under the auspices of the Society of Automotive Engineers and the New York Railroad Club, a two-day group of meetings will be held here Sept. 18-19. Design, operation and maintenance of motor-driven railroad coaches, buses and trucks will be discussed at these sessions.

The bus meetings will be held at the Pennsylvania Hotel Thursday morning and afternoon, Sept. 18. There will be a tour of inspection of local plants on Friday morning, followed by a truck and rail car session in the afternoon at the Pennsylvania. Another truck and rail car meeting will be held at the Engineering Societies Building Friday evening under the auspices of the New York Railroad Club.

Briton to Make Address

One of the leading speakers Friday evening will be James Paterson of London, England, managing director of Carter-Paterson, Ltd., a leading English firm of shippers, which has developed operating methods, vehicles, bodies and trailers to a high degree. J. A. Hoffman, vice-president of the Motor Haulage Co. of New York City, which recently has become associated with the Long Island Railroad in the handling of less-than-carload shipments in the metropolitan area, will be another speaker.

H. W. Howard, transportation engineer of the General Motors Corp., will describe engineering features of trailers and semi-trailers for motor transport service. The Hoffman and Howard papers will be presented Friday afternoon.

J. W. Cain, manager of purchases of the American Short Line Railroad Association, who has experimented with gasoline propelled rail cars for years, will talk Friday afternoon also, while that evening W. L. Bean, mechanical engineer of the New York, New Haven & Hartford Railroad, will treat on rail cars in his paper.

Bus Discussion One Day

The first day, Thursday, will be given over to the bus in morning and afternoon sessions. One of the papers will be presented by F. D. Howell of the Motor Transit Co. of Los Angeles, which is running 125 cars in local and through service over 800 miles of highways radiating out of Los Angeles, operating its own maintenance, assembly and body building shops.

Bus body design and construction will be treated in a paper by Hugh Bersie, and R. E. Fielder, chief engineer of the Fifth Avenue Coach Co., will discuss maintenance methods of that organization as an introduction to an inspection

visit to the shops where Fifth Avenue buses are overhauled and repaired.

V. E. Keenan, superintendent of the bus division of the United Electric Railways Co. of Providence, R. I., and J. B. Stewart, Jr., general superintendent of the Youngstown Municipal Railway Co. of Youngstown, Ohio, will contribute the operating experiences of two public utility organizations that have found it profitable to install motor bus service. W. F. Evans, president of the Detroit Motorbus Co., will present certain of his views on bus design and operation.

FINANCIAL NOTES

Fisher Body Corp. and its subsidiaries report for the second quarter net income of \$1,696,170 after depreciation, interest and Federal taxes. This is equivalent to \$2.82 a share earned on the 600,000 outstanding shares of no par value common stock and compares with \$6.16 in the corresponding quarter last year. The net income of the Fisher Body of Ohio Co. was \$263,604 after deductions, against \$1,081,288 in the same quarter in 1923.

American Bosch Magneto Co.'s total sales for the first half amounted to \$5,773,848, against \$6,075,279 in the corresponding period last year. Net profits after all expenses and charges were \$176,980 as against \$274,802. This showing was equal to \$1.84 a share on the 96,000 shares of capital stock outstanding against \$2.86 a share last year.

Kelsey Wheel Co. reports net sales of \$8,443,986 and net profit of \$766,749 before Federal taxes, for the first half. After preferred dividends, the net profit was equal to \$6.81 a share earned on the \$10,000,000 common stock outstanding.

Marlin-Rockwell Corp. shows gross earnings of \$327,090 and net profit of \$83,603 for the second quarter. This is equal to 16 cents a share earned on the common stock.

Raynolds Spring Co. has declared the regular quarterly 1½ per cent dividend on the A and B stocks, payable Oct. 1 to stock of record Sept. 15.

Packard Motor Car Co. has declared the regular quarterly dividend of 1¼ per cent on the preferred, payable Sept. 15 to stock of record Aug. 31.

Hudson Motor Car Co. reports July net earnings of \$1,019,000, after all charges and allowances for taxes and depreciation reserves.

Demand of Dealers High for Olds Closed Models

DETROIT, Aug. 23—Orders from dealers following the introduction of the 1925 Oldsmobile models have run heavily to closed models, the factory reports. Officials estimate that at least 70 per cent of production from now to January will be closed models. In several sections, the company states, this closed car demand is as high as 85 per cent for immediate delivery, despite the fact that it is now late summer.

Dealers generally have been much impressed by the 1925 models, said Guy H. Peasley, sales manager, and have increased their shipping specifications in many instances.

Meetings to Be Held During Truck Exhibit

Association Will Set Aside Hall
for Exchange of Ideas of
Dealers and Owners

DETROIT, Aug. 27—To provide facilities for meetings during the national motor transportation show of Motor Truck Industries, Inc., the association will set aside a convention hall in the show building, where dealers, or operators of trucks and buses, may meet for discussions. It is the belief of the truck association that plans relative to the formation of a national bus owners association will come to a head about the time of the transportation show, and the convention hall will be available for meetings incidental to this. The show will be held Oct. 21 to 27 in American Exposition Palace, Chicago.

Big Representation Expected

Motor Truck Industries will soon issue invitations to the show, these to be limited to dealers and national owners of trucks and buses, and it is confidently expected that a large representation from the central district of the United States will attend. A considerable attendance is also expected, especially of large fleet owners, from the Pacific and Atlantic Coast.

These invitations will offer the use of facilities of American Exposition Palace as headquarters for the various get-together meetings which dealers, or truck or bus owners, may schedule for show week. As a national show, bringing together representatives of these parts of the industry from all sections, it is recognized that an opportunity will be afforded for discussing organization and the association is aiming to cooperate in every way possible.

Passenger and freight transportation alike will be features of the show. The actual exhibiting of the trucks on the exhibition floor will be incidental to the working demonstration of the vehicles and special equipment in a space adjoining the exposition building. Every innovation in truck design or adaptation of equipment to truck use will be shown working. By this means it is expected to emphasize the possibilities of additional utility and economy from commercial vehicles.

A Clearing House of Ideas

Nationally known figures in the industry, not only in the manufacturing end but in the transportation field as well, will attend the show and will address special meetings which show visitors may call. Every effort will be made to make the show a clearing house of ideas, and a full opportunity will be given for interchanges of experiences. Legislative questions and suggestions on how to advance the cause of commercial vehicles will be leading questions of discussion.

Bus Makers to Meet with Rail Interests

Will Also Exhibit at Show to Be
Held in Conjunction with
Association Meeting

NEW YORK, Aug. 26—Automotive interest will run high in the approaching annual convention of the American Electric Railway Association which will be held on the Million Dollar Pier at Atlantic City Oct. 6-10. Not only will 25 per cent of the space in the show which the association will hold at the same time be occupied by motor bus manufacturers, but there will be a get-together on the part of street railway people and the automobile industry because of the increasing popularity of the motor bus in the traction world.

The harmony that now exists between the erstwhile rivals, the trolley and bus, will be emphasized most strongly at the meeting of the Coordination Division of the A. E. R. A., scheduled for Thursday, Oct. 9, when the report of the Committee on Unification and Coordination of All Forms of Local Transportation will come up for consideration.

Brousseau to Speak

This committee is headed by G. A. Richardson, vice-president and general manager of the Chicago Surface Lines, who has arranged for discussions on the "Coordination of Motor Vehicle and Electric Service by Electric Railways." A. J. Brousseau, secretary of the National Automobile Chamber of Commerce and manufacturer of Mack trucks and buses, will hold the brief for the automobile industry, while a prominent representative of the electric railway interests, not yet named, will speak for his clientele.

This will follow another important automotive-street railway session which will be held Tuesday afternoon under the auspices of the Transportation and Traffic Association, a unit of the A. E. R. A. At this meeting there will be considered a report from a sub-committee on Trackless Vehicle Operation, of which W. J. Flickinger, assistant to the president of the Connecticut Co. of New Haven, is chairman.

Bus Standardization Report

The Engineering Association, another unit, is expecting to receive a report on bus standardization from a sub-committee representing both the A. E. R. A. and the Society of Automotive Engineers, with Col. G. A. Green of the Chicago Motor Coach Co. representing the S.A.E. and P. V. C. See of the Northern Ohio Traction and Light Co. the street railway interests.

This sub-committee has not tackled the standardization problem as understood by the automobile manufacturers, but has undertaken only its A. B. C.'s. It hopes to standardize bus nomenclature and to define ruling dimensions so as to simplify the problems of the bus de-

signer. This report will be brief and will be submitted Tuesday afternoon.

The show itself will be held at the same time as the convention, both at the same place and with no one permitted to have exhibits in hotel rooms. In fact, so determined is the A. E. R. A. to center the show activities to the show building that its directors have passed a resolution which frowns on bus manufacturers having demonstrators at Atlantic City.

Nearly 200 exhibitors have been booked and 84,424 sq. ft. of space will be occupied, in comparison with 75,681 last year. Bus interests will use 23,493 sq. ft. of this space and some 21 bus manufacturers will display their wares. Among them are the following:

White Co., International Motor Co., Fageol Motor Co., American Body Co., J. G. Brill Co., Commerce Truck Co., Garford Motor Truck Co., Graham Bros., Lang Body Co., Pierce Arrow Motor Car Co., Newport Coach, Inc., Reo Motor Car Co., Six-Wheel Co., Taylor Electric Truck Co., Walter Motor Coach Co. and Yellow Coach Manufacturing Co.

Displays also will be made by many parts and accessory concerns from the automotive industry, the list including:

Aluminum Company of America, Robert Bosch Magneto Co., Bridgeport Brass Co., Brown-Lipe Gear Co., Buda Co., Bassick Manufacturing Co., C. G. Spring & Bumper Co., Chicago Pneumatic Tool Co., Clark Equipment Co., Continental Motors Corp., L. C. Chase & Co., Elsemann Magneto Corp., Glidden Co., Hyatt Roller Bearing Co., Janney, Steinmetz & Co., Leece-Neville Co., National Brake Co., Inc., Ohmer Fare Register Co., Pantasote Co., N. A. Petry Co., Inc., Princeton Tire & Rubber Co., Sherwin-Williams Co., Sheldon Axle & Spring Co., E. J. Thompson Co., Timken Roller Bearing Co., Waukesha Motor Co. and Westinghouse Electric & Manufacturing Co.

INDUSTRIAL NOTES

Crane Puller Co. of Arlington, Mass., forced to seek larger quarters, has located in South Deerfield, Mass., where shipping facilities are better. A feature of the new plant will be a model automotive repair shop which will be in the nature of a laboratory in which to develop additional automotive equipment which the company now has under consideration.

Kelsey Wheel Co. is increasing the capacity of its power plant by the installation of a Taylor stoker with steam ash dump under a 500-hp. boiler.

France Orders 30 Trucks with Imbert Gas Producer

PARIS, Aug. 18 (by mail)—An order for 30 trucks equipped with the Imbert charcoal gas producer has been placed by the French military authorities with the Berliet Co. of Lyons, one of the conditions being that the order shall take preference over all deliveries to the public or foreign governments.

This method of producing gas from charcoal is the invention of the Alsatian engineer, Imbert.

METAL MARKETS

The steel market in the last few weeks resembled a two-ring circus. In one of the rings prices were seen to climb slowly upward, while in the other they were slowly sliding down. Such products as sheets and bolts and nuts performed in the former, and plates, shapes, bars, and wire products in the latter. Some observers thought the descent of prices in the second ring the whole show. The performance in the first ring was devoid of the spectacular. In fact, prices did not climb so much as they tightened their grip on the rungs of the ladder where they had previously hung feebly.

After all, though, as an overture to what the market is likely to bring forth in the coming month, the first ring was the real show, the second being merely a sort of a last effort before the curtain is called on the price-tumbling act. Where a few weeks ago the sheet market was decidedly wobbly, today it is admittedly steady, and growing stronger from day to day. Full finished automobile sheets are relatively firmest at 4.75c Pittsburgh, although here and there odd lots of seconds are reported to have been sold at shaded prices. Some producers, eager to increase their backlog of black sheet orders, are reported to be making concessions on desirable specifications, but all of this business is the exception. The wind is blowing the other way.

Sheet-rollers look upon going prices as too low to make orders for deferred deliveries at these levels seem attractive. Keen competition continues to feature the strip market. Middle West producers not only have to meet the competition of recent low prices for automobile sheets which made them advantageous for use as fender stock, but also Pittsburgh quotations of as low as 4c., Pittsburgh, for cold-rolled, and 2.25 to 2.50c., base, on wide, hot-rolled flats. The volume of automotive demand is broadening, however, and while for the time being mills are still more concerned about filling their order books than about price, the growth in bookings is certain to be reflected before long in a stiffening of market levels. Improved conditions are also visible in the market for cold-finished steel bars, especially so in the number of automotive orders received.

Pig Iron.—Foundry and malleable iron prices are tending upward. In markets where advances have occurred, automotive melters are generally biding their time, waiting to see if consumption in general will support the rise. Meanwhile every indication points to a moderate upward swing of prices.

Aluminum.—Routine conditions continue in the aluminum market, but negotiations pending are reported encouraging. The more chipper tone of the copper market cannot fail but in time to impart itself to aluminum, which in its principal outlet, for electrical conductors, competes with copper.

Copper.—The market reflects greater activity in its daily ups and downs, but on the whole the trend appears to be slowly upward. Improved European purchases have been discounted long ago. Speculation in London and the influence of broadened domestic consuming demand are the main factors now.

Lead.—This metal is again in tight supply. Storage battery makers are fairly well supplied. Contract lead is being shipped at 8c., but spot metal commands a premium.

Calendar

SHOWS

- Oct. 21-27—Transportation Show, Motor Truck Industries, Inc., American Exposition Palace, Chicago.
- Nov. 9-15—New York, Annual Automobile Salon, Commodore Hotel.
- Nov. 10-15—Chicago, Annual Show and Convention of the Automotive Equipment Association, Colliseum.
- Jan. 2-10—New York, National Automobile Show, under the auspices of the National Automobile Chamber of Commerce, Bronx Armory. Trade attendance only, Jan. 2-3.
- Jan. 23-31—Chicago, National Automobile Show, under the auspices of the National Automobile Chamber of Commerce, Colliseum and First Regiment Armory. Trade attendance only, Jan. 23-24.
- Jan. 25-31—Chicago, Annual Automobile Salon.

FOREIGN SHOWS

- September—Vienna, Austria, Vienna International Fair.
- Sept. 13—Sao Paulo, Brazil, Annual Automobile Show.
- Sept. 21-28—Prague, Czechoslovakia, Prague Autumn Fair.
- Oct. 2-5—Danzig, Second International Danzig Fair, automobiles and allied equipment.
- Oct. 2-12—Paris, passenger cars, motor cycles, bicycles and accessories, Grand Palais.
- Oct. 17-25—London, Annual Passenger Car Show, Olympia.
- Oct. 22-31—Paris, motor trucks, stationary engines, garage tools and machine tools, Grand Palais.
- Nov. 9-19—Buenos Aires, Annual Automobile Show, Pabellon de las Rosas, under the auspices of the Automovil Club Argentino.
- Dec. 1-13—Montevideo, Uruguay—Second Annual Motor Show, under the auspices of the Centro Automovilista del Uruguay, held in buildings of the Asociacion Rural del Uruguay.

RACES

- Sept. 1—Altoona.
- Sept. 1—Syracuse.
- Sept. 7—Monza Track, near Milan, Italy, Italian Grand Prix.
- Oct. 2-4—Dayton, Ohio, Fifth Airplane Race for the Pulitzer Trophy.
- Oct. 4—Fresno.
- Oct. 19—Kansas City.
- Nov. 24—Los Angeles.

CONVENTIONS

- Sept. 17-20—White Sulphur Springs, W. Va., Annual Meeting of the Automotive Electric Association, Greenbrier Hotel.
- Sept. 19-20—Niagara Falls, N. Y., National Battery Manufacturers Association.
- Sept. 22-26—Boston, Sixth Convention and International Steel Exposition of the American Society for Steel Treating.
- Oct. 15-17—Cleveland, Fall Convention of the Motor and Accessory Manufacturers Association.
- Oct. 16-18—Briarcliff Manor, N. Y., Semi-Annual Meeting

of the American Gear Manufacturers Association, Briarcliff Lodge.

- Jan. 5—New York, Convention under the auspices of the National Automobile Dealers Association, Hotel Commodore.
- Jan. 26-29—Chicago, Eighth Annual Convention of the National Automobile Dealers Association, Hotel LaSalle.

S. A. E. MEETINGS

- Sept. 18-19—New York City, S.A.E. Automotive Transportation Meeting.
- Sept. 26—Washington Section, Cosmos Club, The Chemical Control of Gaseous Detonation, Thomas Midgley, Jr.
- Oct. 2—Aeronautical Meeting at Dayton at the time of the Pulitzer Races.
- Oct. 22-24—S. A. E. Production Meeting, Detroit.
- Nov. 13-19—Joint Service Meeting of the S. A. E. with the N. A. C. C. Cleveland.
- Jan. 20-23—S. A. E. Annual Meeting, Detroit.

More Foreign Tires Reach This Country

(Continued from page 422)

The number and value in themselves are not large, it is pointed out, but the fact that the foreign manufacturers have so suddenly made headway in the American market has amazed the rubber leaders and made them wonder what will result from the placing of Europe on a sound economic basis.

While English as well as Italian companies participated in the invasion of the American market, the majority of the imported tires come from France.

The seven months total of exports shows that the value amounts to \$8,784,670 as compared with \$11,825,449 during the corresponding period of 1923.

Despite the drop behind the corresponding period of last year, the last three months have witnessed an improvement over the first four months of the year. At the end of the first quarter of the year exports for 1924 amounted to \$3,064,304 as compared with \$5,928,050 reported for the corresponding quarter of 1923.

Canadian Exports in 1923

Canada during 1923 exported into other countries tires valued at \$6,087,281, as compared with exports during 1922 of \$4,330,556.

This to some extent accounts for the losses sustained by American manufacturers in British colonies where the drop has been large during this period. New Zealand's imports, for instance, amount to \$418,248 as compared with \$798,456 imported during the first seven months of 1923.

South African imports for the seven months amount to \$262,058 as compared with \$455,970 of the 1923 period. Im-

ports into England proper amounted to \$1,121,839 for the first seven months of the year as compared with \$2,275,700 imported during the first seven months of 1923.

Since more than 50 per cent of the Canadian rubber industry is owned and controlled by American capital, the benefits accruing to Canada indirectly come to American investors.

"Road Hog" Blamed for Many Accidents

NEW YORK, Aug. 25—Estimating that 9500 lives have been lost on the highways this year, chiefly in preventable accidents, the Traffic Planning and Safety Committee of the National Automobile Chamber of Commerce expresses the belief that ostracism of the "road hog" and personal responsibility are the two factors which can materially reduce the motor death rate in the next three months.

Analysis of 9131 fatal and non-fatal accidents in Oregon indicates that 1381 were due to "road hoggishness," or failure to give right of way. Sixty per cent of all accidents in that state were due to the carelessness on the part of the operators or drivers. The N. A. C. C. advocates the development of a public opinion that will ostracize the "road hog."

The committee reports 413 motor fatalities in July, bringing the total for seven months up to 3331. In 261 of the accidents it was a case of motor vehicle and pedestrian; 43 were caused by collisions between motor vehicles; 7 were motor vehicle vs. electric railway; 5 motor vehicle at railroad crossing; 13 motor vehicle over turning; 5 motor vehicle striking bicycle and 5 motor vehicle striking stationary object.

Winner in Air Race Is Siddeley Engined

LONDON, Aug. 16 (by mail)—The air race round Great Britain for the King's Cup was won this week, with a handicap allowance, by A. J. Cobham, flying a D.H. 50 biplane with a 230 hp. Siddeley "Puma" engine. A Siddeley engined machine also made fastest time. This was a Siddeley Siskin III, with a 325 hp. Siddeley "Jaguar" engine, one of two similar machines which gave all other entrants a handicap allowance.

In a direct flight the course represented 955 miles, but it is certain that the majority, if not all, of the competitors made the distance approximately 1000 miles from the start of the race to its finish.

The Siddeley machine which made the fastest time completed the course at an average speed of 126.15 m.p.h., assuming the distance covered as being 955 miles. The pilot landed to refuel, at practically half-way round, on the Isle of Man, and flew most of the way at an altitude of between 1000 and 2000 ft.

Six Planes Finish

Ten machines started and six finished. All can be considered standard commercial machines, including two supermarine amphibians with 450 hp. Napier "Lion" engines. One of the latter completed the course.

The King's Cup was awarded to the fastest time with the handicap allowance. Flight-Lieut. Jones was the winning pilot. He was followed by Captain Macmillan in a Fairey 3D seaplane with a 450 hp. Napier "Lion" engine, while A. Butler flying his own D.H. 37, with a 275 hp. Rolls-Royce "Falcon" engine, was third.